

The Australasian MANUFACTURER

SERVING ALL INDUSTRY

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Saturday, September 9, 1950.



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AFTER BUSINESS HOURS

What Next?

RECENTLY six employees of a big concern in Newcastle, N.S.W., who were responsible for keeping the "gentlemen's conveniences" in order, and who were in the unique position of receiving the basic wage and not a penny more, decided that they deserved a margin for skill and demanded an extra 6/- a week.

Press reports say the company pointed out that there was no provision in any award or wage fixing formula under which this extra money could be claimed.

The six sanitary attendants immediately went on strike. Because hygiene is a most important thing in a factory of 1,600 men, staff officers were assigned to hose down floors and toss around disinfectant.

This seemed to be strike-breaking in its worst form. The 1,600 employees declared the "gentlemen's conveniences" black.

In spite of all temptation they stayed right away from them for

two complete days. Then human endurance could stand the strain no longer and the black ban collapsed.

Company officials discovered that an amazing thing had happened over the two days—production for the period had established an all-time record for any two consecutive days in the history of the organisation.

Workers who had always taken a traditional 10 minutes in the morning and 10 minutes in the afternoon to read the paper and have a secret cigarette had not left their lathes and benches. An extra 20 minutes each day had gone into production.

A CANADIAN barber has insulated his new home with his lifetime savings of customers' shorn locks.

IT is said that horse trainers view with disfavour nags who

have four white feet. As a rule, they say, animals with such markings have weak ankles and sore feet. There's an old English jingle about it that goes like this:

One white foot, ride him for your life,

Two white feet, give him to your wife,

Three white feet, give him to your man,

Four white feet, sell him—if you can!

MOST big-shot gamblers, and some little-shot gamblers, have dreams of visiting, at some time or another, The Monaco Sea Bathing and Foreigners' Club Incorporated (Societe Anonyme des Bains de Mer du Cercle des Etrangers a Monaco). They'd be more likely to refer to it by a more familiar name — the Monte Carlo Casino. It stands in the Mont Charles district of the tiny Principality of Monaco. "Mont Charles" being corrupted to the Italian "Monte Carlo" nearly a hundred years ago for some reason or other. "The Man Who Broke The Bank At Monte Carlo" was an Englishman, Charles Wells. It happened in 1891, and in 13 hours he won more than £50,000. Breaking the bank, incidentally, merely means that the table at which the player is betting has exhausted its supply of plaques. Play is suspended at that table until more are brought from the safe.

IN the Brisbane Divorce Court, a plaintiff admitted that when he found a man in bed with his wife he said to him: "You might as well make a job of it and camp there the night, now, but you'd better be out by 8 in the morning."

AFTER nearly 20 years of complete nakedness, 50 huge 15-ft. marble statues of muscular men in Rome are being fitted with stone fig leaves. Together with a banning of lurid posters advertising brief bathing costumes and a round-up of bothersome prostitutes, it forms part of a Government campaign to tidy up the face of Rome for Holy Year pilgrims. An official pronouncement stated: "Pressure will be exerted until all incitements to immorality are erased."

AN American arrested after he had robbed the same department store three times, explained that the store was near his home and that he hadn't wanted to walk too far.

A CLEANER employed by a U.S. chain store strolled in one morning and remarked to one of the sales girls that he intended to slick up the store. The girl thought he said "stick up the store", squawked for the police and had him arrested.

IN 1917, Sir James Dewar blew a soap bubble that lasted 108 days. It was a record that stood until 1938 when Eiffel G. Plasterer, of New York, inflated one that lasted 180 days. Now Mr. Plasterer, who gives lectures and demonstrations to science groups, is mourning his latest record breaker which popped the other day after glistening for 200 days.

A MAN may fail many times, but he isn't a failure until he begins to blame somebody else.


THE perfect girl is a German frau. She is 5ft. tall, weighs 7 stone, doesn't care for clothes, doesn't drink, and doesn't talk unless asked. Her name is Lumena. She is a transparent robot, made by two German scientists, and she gives a seven-minute talk (illustrated by her own workings) on the female body.

IN the North Carolina (U.S.) Military District, G.I.'s have been issued with sun helmets and heavy woollen scarves.

A "JUDAS" sheep is missing from the Launceston meat works where she is employed, and a reward is offered to the person who betrays her whereabouts. The sheep, Nanny, leads sheep marked for slaughter into the slaughter pen in batches, and then walks out and leaves them to their fate. Nanny's predecessor, Bill, died a natural death after a most distinguished record of double-crossing. Among Bill's victims was inadvertently his own mother, who was Bill's predecessor on the job.

EGG-SIZE hailstones with metal cores fell in Vermont (U.S.) recently. Coke ovens had shot particles of metal into the air, ice formed round them, and high winds carried them 25 miles before they fell, causing considerable damage.

LIFE in Spain is becoming quiet, even dull. Bull-fighting has sunk to the lowest ebb ever. Up to the end of June this year there have been only 50 "corridas"



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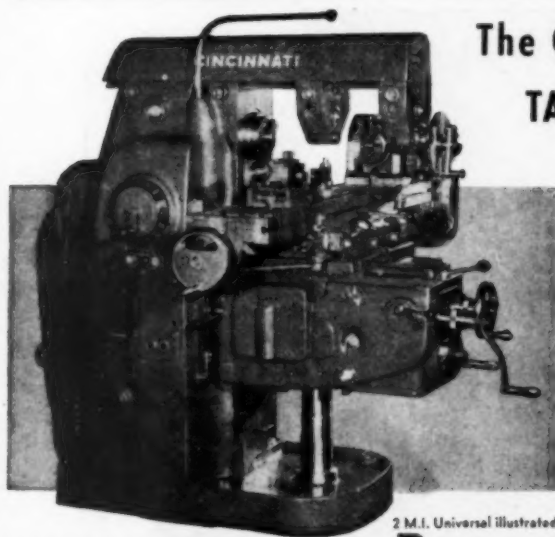
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compared with 82 in the same period last year (previously the lowest on record). Leading mator, Manolo Gonzales, with only 30 fights to his credit, is practically unemployed.

In Madrid, motorists have been forbidden by a new law from sounding their horns at street crossings at night. People singing in the streets after nightfall will also be punished under a new law introduced by the Mayor.

The municipality of Agudo, which recently prohibited dancing of the Mexican La Rapa has now extended the ban to marionette dolls. Agudo objects to the dance on moral grounds. In La Rapa the dancers separate and make gestures to one another which can become suggestive.

Anytime now, the rains in Spain will be ordered to refrain from falling mainly on the plains.

THE municipal cafe at Torquay (Eng.) with its terrace and gaily coloured tables under umbrellas next door to Cockington Church will in future open half-an-hour later on Sundays. The local council decided this after the Vicar complained that the cafe was tempting people away from his congregation.

At Random

A sincere and earnest layman had an unfortunate habit of belching, especially when he prayed in public. After one of his loud prayers, during which the rafters almost vibrated, a little girl whispered to her father: "Don't you think if he lived nearer to God he would not have to talk so loud?" — "Arkansas Baptist."

Income tax has made more liars out of people than golf has. — Will Rogers, American humourist.

If you're in the right, argue like a man. If you're in the wrong, like a woman. — "Optimist Magazine."

Silence isn't always golden. Sometimes it's just guilt. — "Answers" (London).

A real estate man is reported to have taken his son out of school because the lad wasn't being taught subdivision. — "Montreal (Canada) Star."

Every minute in U.S.A. 2 houses are built, 7 babies are born and 10 automobiles are produced. . . . The life expectancy of the house is 100 years, the baby 66.8 years and the automobile 8.4 years. — "Architect and Engineer."

A scandal is something that has to be had to be good. — Ed. Wynn, radio and movie comedian.

\$66,000 WORTH OF AIR-CONDITIONING.

Contracts had been let to J. Stone & Co. Pty. Ltd., of Sydney, for \$66,000 worth of air-conditioning equipment for the fast Diesel electric trains to be placed on the trans-Australian railway, the Commonwealth Railways Commissioner (Mr. P. J. Hannaberry), said in Adelaide recently. A start on equipping two full trains of nine cars each — diner, lounge cars, sleepers, and brake van — would be made early next summer.

These luxury trains would be hauled by steam locomotives until the Diesel engines became available.

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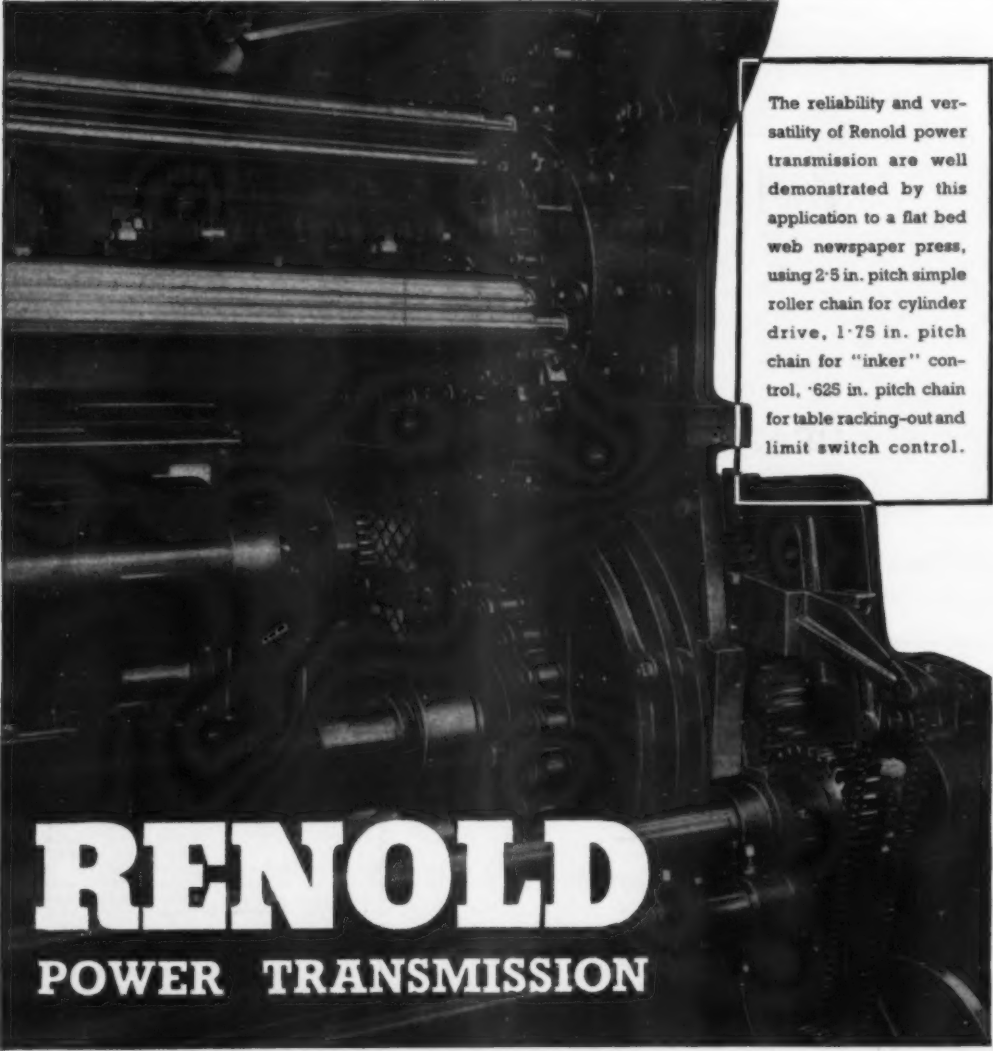
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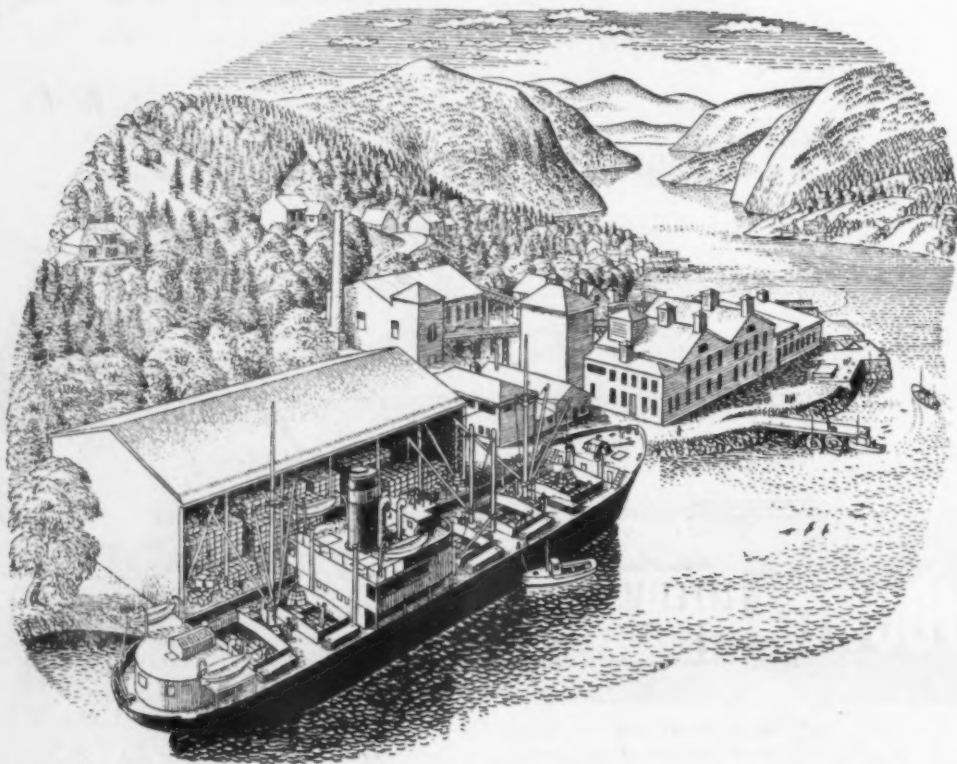
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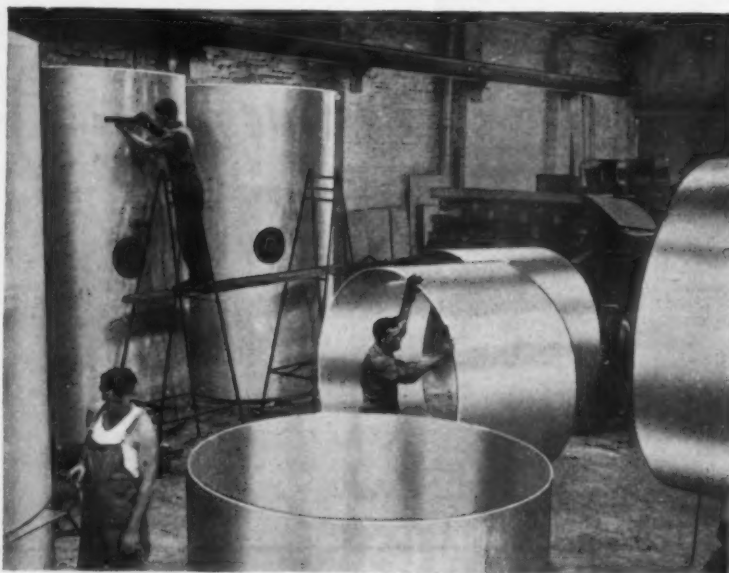


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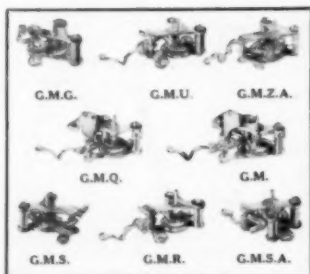
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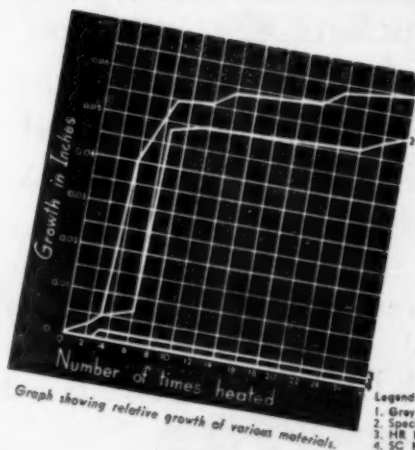
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out of the rock  Then I was put
into a pot  and it was made hot for me-
gee, was it hot! - I just melted and ran out 

I began to cool down but suddenly I found
myself being crushed between two heavy rollers 
was I flattened! I came out black and flat 

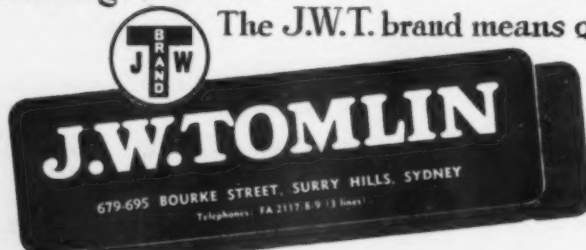
I rested for a while - until one day I was placed on a slab
and whack - something hit me into a shape -  into
a bath which once again was hot, but I came out all
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I came out in the form of buckets,  garbage
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PAGE FIFTEEN SEPTEMBER 9, 1950.



Australia's Button-making Industry Threat to Its Survival

A nation setting about the task of achieving a high measure of industrial self-sufficiency is obliged to undertake the production of most of the basic essentials of modern civilised life. Its manufacturing activities, that is to say, must extend over an extremely wide field, ranging from the simple to the complex, and from the infinitely small to the mighty and powerful. It must concern itself with the production of iron and steel; the building of ships; the fabrication of aircraft; the making of motor vehicles; the production of machines and machine tools; the making of bolts and nuts; the spinning and weaving of wool, silk, and rayon; and the manufacture of a host of small, but highly significant accessories. Notable examples in this regard are buttons.

THIS last-mentioned branch of production, though engaged in the making of small objects, plays, nevertheless, an important part in Australian industrial development deserving, in consequence, the support and the loyalty of the Australian people—and the inestimable boon of adequate Protection, especially during the days of initiation.

It is to be feared, however, that at the moment Australia's button-making industries are by no means the recipients of all of these basic essentials to their success.

True, to a marked degree they are receiving the loyal support of the Australian people. For to-day the overwhelming majority of Australian women are proud to feature Australian buttons on their ensembles, these buttons having won the honoured place they occupy by their beauty of colour, uniqueness of design, and the high quality of the raw materials of which they are made.

The measure of Protection being granted to the industry, however, is totally inadequate, failing to include within its ambit a number of important new lines which have been brought into production since the tariff schedules were first drawn up.

Indeed, it may not be going too far to say that at the present juncture the very existence of these industries is threatened by the dumping on the Australian market of immense quantities of buttons from Czechoslovakia. For, according to local producers, buttons from this source are not only being sold to the Australian wholesale and retail trades at prices lower than they can be manufactured here, but Czech agents are even prepared to sell at figures which take no cognisance whatever of the competitive factor.

Australian manufacturers claim that this position has arisen because of the "favoured-nation" tariff and the By-law admission of buttons for men's clothing.

For instance, By-law 449B, permits the entry of buttons from Czechoslovakia and Italy at a duty of 17½ per cent. instead of 47½ per cent., this remission dating from the time Australia had not undertaken the manufacture of this class of button. To-day, however, she has demonstrated that she can make them, and make them well—provided she is not prevented from doing so by dumping from abroad. Exactly the same position exists with regard to plastic buttons in variegated colours, large quantities of Czech and Italian buttons of this type coming into this country at reduced rates of duty, despite the local production of their counterparts. Again, various classes of Czech buttons whose composition includes gold and/or silver are being admitted at tariff rates which fail to pay due regard to their true composition. For, if they were described correctly, the appropriate duty is 62½ per cent., whereas in actual fact they are coming in at the usual 12½ per cent. "favoured-nation" tariff, plus 10 per cent. primage.

This means their sale in this country at prices below those at which they can be produced here.

The higher rate of Australian production is, of course, the direct outcome of high Australian rates of pay and short hours of work.

The Australian button industries, being relatively a new entrant into the manufacturing field, is equipped with the latest plant and machinery, plant lay-out conforms to the latest overseas ideas, and the newest manufacturing processes are adopted. Being more or less in the "infant" class, however, they cannot stand four-square against dumping on a large and highly organised scale.

These industries give direct employment to over one thousand work-people, and indirect employment to many thousands of workers in the plastics and other industries providing the raw materials of production.

It is evident, therefore, that Australia's button industries occupy an

important place in the national economy. They deserve, accordingly, and assuredly must receive, such Protective assistance as is indispensable to their survival.

These industries are modern in management and in planning. Their

plant is modern. Their products are modern. Such additional Protection as is granted, therefore, will foster the growth and expand the developments of Australian undertakings whose watchwords are Modernity, Quality, and Efficiency.

Pithy Jottings of Industry and Industrialists

JET PLANES TO BE MADE LOCALLY.

It is announced that the Commonwealth Aircraft Corporation Pty. Ltd., Fisherman's Bend, Melbourne, is to build Britain's new jet super-fighter interceptor, the single seat Hawker P1061, for use by the R.A.A.F. The fighter will be powered by a Rolls Royce Nene engine and will be armed with four 20 m.m. cannons. Its wing span will be 31.5 feet and its overall length, 37.3 feet, with the wing capable of being swept back 35 degrees. It is to be manufactured in Australia under licence, in accordance with the terms of a contract signed recently in London between the Commonwealth Government and the Hawker Aircraft Company. Over a considerable period, designers and engineers of the Commonwealth Aircraft Corporation have been in England studying every detail of the project.

NEW PLAN FOR APPRENTICES.

The Commonwealth Minister for Immigration and Labour (Mr. Holt) said the other day that British trade apprentices may be admitted to their trades in Australia at the point where they stop training in Britain. Mr. Holt said that officers of his departments were considering this plan.

This would help to relieve the shortage of apprentices in Australia, Mr. Holt added.

Apprenticeship authorities in all States were willing to register British apprentices.

Expansion of industry, not higher wages offering for unskilled labour, had caused the shortage of Australian apprentices, the Minister added.

Mr. Holt said that during the past few years 14,000 Australian youths a year had become apprenticed to trades, compared with about 7,000 in 1939.

He added: "However, the general picture is one of continuing shortage, and of good prospects for apprentices and tradesmen."

"In only a few trades does it seem that the supply of apprentices in the next few years will approach the demand."

VACUUM OIL COMPANY'S SCHOLARSHIPS.

The Vacuum Oil Co. Pty. Ltd. is endowing scholarships to the value of £500 a year at the universities of Sydney and Melbourne. In making this announcement, the company's managing director, Mr. Harold Rabling, explained that the object of the endowments is to assist men in

chemistry, chemical engineering, and mining engineering research.

This is a splendid move on the part of the Vacuum organisation. It is a move, moreover, which "The Manufacturer" would like to see emulated by industrialists in every sphere of production.

J. C. LUDOWICI & SON LTD. S.A. MANAGER.

Mr. Lance Wearne, former sales manager of J. C. Ludowici and Son Ltd., Sydney, power transmission engineers and tanners, has



MR. LANCE WEARNE,
S.A. Manager for J. C. Ludowici & Son Ltd.

been appointed South Australian branch manager of the company's recently opened Adelaide office.

Mr. Wearne is 52 years old. He has been with Ludowici and Son for 38 years, the past 15 of which he has been sales manager.

Interviewed recently, Mr. Wearne said the company considered there was sufficient potential in S.A. to warrant opening a branch in Adelaide. This was part of the firm's expansion policy.

It was proposed to develop all phases of the company's business in Adelaide, he said.

The branch was opened at the beginning of August. Before that date, Harris, Scarfe and Co. Ltd. had acted as agents for the firm.

South Australian business had started well and showed good promise, said Mr. Wearne.

Adelaide address is 122-124 Currie Street. The premises were bought last June. Alterations and additions now being carried out would give the company an attractive showroom and offices.

STEEL AGENCY CORRECTION.

It is necessary for us to correct two errors which appeared in a short article, "Special Steels and Engineering Supplies", concerning the activities of Wm. Barron & Son Pty. Ltd., of Wyndham Street, Alexandria, N.S.W.

In the article we credited this company with being the representatives of Waverley Steel Works, of Sheffield, England, and said that they were distributors of "Veroloy" sand blast nozzles.

Since publication we have been informed that Wm. Barron & Son Pty. Ltd. are not now representatives of the Waverley Steel Works, and that the only sand blast nozzles available through them are the "Panzar" brand. These nozzles, and the "Secc" tungsten carbide tips and "Vivax" wire drawing dies distributed by Wm. Barron & Son Pty. Ltd., are manufactured by Fagersta Bruks, of Sweden.

OTIS EXECUTIVE FOR U.S.A.

Mr. H. Fairfax Johnson, S.A. manager for Otis Elevator Company, left Adelaide recently for America and Canada, where he will investigate latest developments in lift and escalator manufacture and design.

NORTON, TOOTILL WOLLONGONG MANAGER.

Mr. Leonard Felton has accepted the appointment of Manager of the Wollongong Branch of Norton, Tootill & Company Pty. Ltd., rendered vacant by the resignation of Mr. W. E. N. Shannon.

Mr. Felton is well known in engineering and industrial circles generally, and on the South Coast in particular, having been with Australian Iron & Steel Ltd. for the past twenty years in a number of capacities. He brings the benefit of a wide experience to his new appointment, and will take up duties on Monday, 4th September.

The former Manager, Mr. Shannon, has accepted an executive

position in the Purchasing Office of a Sydney firm of manufacturing and telephone equipment engineers. He carries with him the good wishes of many friends in the South Coast district.

NEW COOPER ENGINEERING FACTORY.

A £1 million factory is to be built at Campsie, Sydney, by the Cooper Engineering Co. Pty. Ltd. The building of the first section of the new factory will start next year and the completed project will be extended over a period of five years.

A director, Mr. H. F. Burford, said that his firm had bought a 10½ acre factory site in Harp Street, Campsie, for £20,500.

The firm's present factory at Mascot was too small for the expansion programme, he said.

Mr. Burford said that the Cooper Engineering Co. Pty. Ltd. planned to increase its staff from 700 to 2,000.

The firm, a subsidiary of the Sunbeam Corporation, of Chicago, had been established in Sydney for about 40 years.

MORE CAPITAL FOR DIECASTERS.

The Adelaide firm of K. Bowes & Co. Ltd., specialists in die-casting, is to raise its nominal capital from £50,000 to £100,000.

The business was founded in 1937, and about 80 hands are now employed at the Woodlands Park factory.

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Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

Welding of Thin Sheets New Type G.E.C. Spot Welder

A new 4 kVA spot welder is announced for the resistance welding of very thin sheets, wires, or any purpose for which precise control of all the variable factors is of importance. Typical uses for this new equipment which was designed in the G.E.C. Research Laboratories, are to be found in the valve and lamp-making industries, jewellery trades, radio, electrical and scientific instrument making, surgical instrument making, watch and clock trades, the manufacture of automobile electrical equipment and the welding of fountain pen nibs.

Hitherto many non-ferrous metals and alloys have been considered unsuitable for resistance welding, but with the development of this welder, with its short accurately-controlled welding times and its fully controllable current and electrode pressure, it is now possible to weld these metals successfully.

The high conductivity metals such as copper and silver which are naturally difficult subjects for resistance welding, can be satisfactorily welded by providing the weld current in the form of a heavy pulse of one cycle duration and by using electrodes of a relatively high resistance metal such as molybdenum.

Short, accurately controlled welding times are obtained by an electronic control circuit which connects the primary of the welding transformer to the mains through two reversely-connected thyatrons. A resistance-capacitance combination in the grid circuit of the valves controls the welding time accurately between 1 and 6 cycles, depending on the setting of the variable resistance while the use of a synchronised circuit ensures that the weld always starts at the same part of a cycle.

It will be appreciated that with a welding time of the order of one-fiftieth of a second, the collapse of the metal is extremely rapid and a quick follow-up by the electrode is essential to ensure proper forging of the weld. For this reason a low-inertia electrode holder has been designed. In the case of

many non-ferrous metals and alloys, welding is successful if the conditions are right but the margin on these conditions is very limited, so that fully variable controls are essential.

This point has been fully borne in mind in the new welder and records can be kept of all settings with the knowledge that the same settings will produce the same results at a later date.

Welding current is adjustable by means of a variable resistance in the primary circuit of the mains transformer. Electrode pressure is

variable between 5 and 50 lbs. and the foot-operated switch for welding will function only when the pre-set pressure has been applied. The electrodes can be spaced to permit the welding of components to relatively large assemblies.

Other features of this spot welder include a signal lamp to indicate when a weld has been completed and a built-in work lamp with an adjustable reflector.

The welder is arranged to operate from 400-440 volt, single-phase mains. The rating of 4 kVA is in terms of the B.E.A.M.A. formula (50% of the short circuit kVA).

The G.E.C. is represented in Australia by The British General Electric Co. Pty. Ltd.

A Show Window for Industrial Australia

The Twentieth Century Mechanical Exhibition is to be held in Melbourne next month. Australian primary industry achievement and potentialities are displayed and publicised in every State at annual shows and exhibitions; in Victoria the accent will be on secondary industry, and wide publicity will focus public attention on manufactured articles and manufacturing machinery and equipment of all types. The exhibition, with all the fascination which attends working demonstrations of machinery of any kind, will show the public how the goods are made, treated and finished. They will see the well known and lesser known brands of commodities of all kinds actually in course of production, watch light and heavy machinery in operation, production units, big and small in operation, printing machinery producing associated publicity, and see spread before them in all its scope the secondary industry achievement of Australia.

Modelled after the Industrial Fairs of England, the Continent and America, with dramatic displays, a continuous cinema and innovations adapted to our own conditions widening the range of interest, the Twentieth Century Mechanical Exhibition is being supported by extensive national publicity. Melbourne newspapers

are issuing special supplements tracing the development of industrial Victoria; radio and other media are anticipating and developing public interest, interstate, as well as in Victoria, with a wide coverage. Intense publicity in Melbourne immediately preceding and during the exhibition will include band parades through the city, special articles in all papers and supporting publicity by large exhibitors. There seems little doubt that this will be one of the best attended, as well as the most interesting of spectacles staged in Melbourne's historic Exhibition Building.

The Institute of Victorian Photographers has accepted the offer of the organisers to make a display of commercial, illustrative and industrial photographs in monochrome and in colour, but not portraiture. The Institute will appoint a Committee of Selectors, and any studio is invited to submit work included in the categories mentioned. There is no limit as to size of prints. Direct advertising must be avoided if possible. The work must be mounted on stiff white or cream board ready for tacking up. Glass framed exhibits will not be accepted. Labels or titles or other descriptive matter should be confined to the mounts of the individual exhibits. There will be

no charge to the Institute or to the studios exhibiting.

To preserve uniformity, the Institute will provide titles of the names of the studios exhibiting and also the sign or signs heading the display. Studios will be required to supply their own light box if colour transparencies are to be exhibited. All entries must be sent to the secretary, The Institute of Victorian Photographers, c/o Burlington Studios, 323 Bourke Street, Melbourne, to reach him not later than Monday, 4th October, 1950.

Storage Battery Production Development

Loxite Ltd., of Adelaide,
Merger with Joseph Lucas
(Aust.) Ltd.

Extension of the 51-acre plant of Loxite Ltd., Adelaide battery manufacturers, would mean the addition of a valuable industry to S.A., the Premier (Mr. Playford) said recently.

Under a merger announced just before the Premier's statement, Joseph Lucas (Aust.) Ltd., a subsidiary of Joseph Lucas Ltd., England, has acquired a substantial interest in Loxite Ltd.

Mr. Playford said the company would help meet the needs of both S.A. and W.A. for batteries.

Mr. J. E. Vardon, manager of Hannan Brothers—Lucas' S.A. representatives—said automatic pasting machines, and other modern equipment would shortly be installed in Loxite factories at Southwark and Wingfield.

"A complete range of Lucas batteries, similar to the English products, will be made here," Mr. Vardon said. "At present, technicians from the Birmingham factory of Joseph Lucas Ltd. are working on the installation of a battery plant in Melbourne. They will probably work on similar installations here."

Mr. Vardon said most S.A. battery supplies at present came from Sydney. The new factory would be the only industry of its type in this State.

Because of the automatic machinery being installed, the new plant would not drain available labour.

Coil winding MACHINES

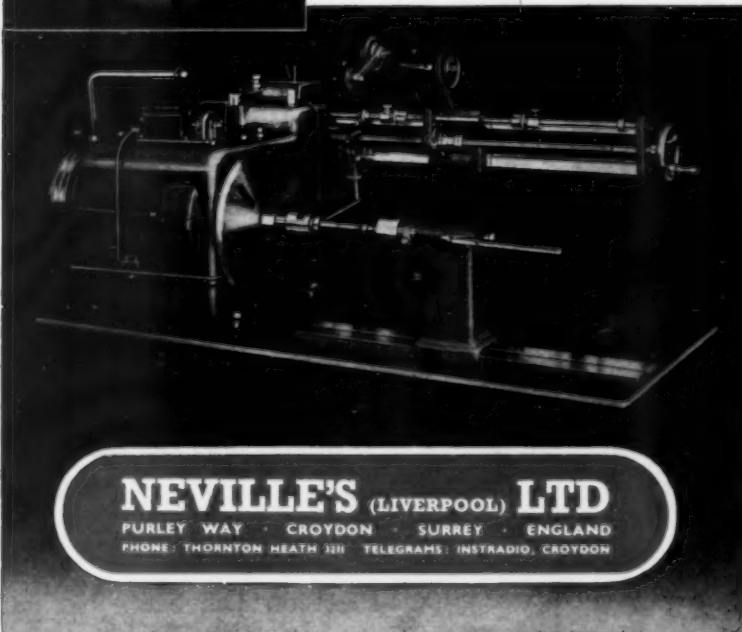
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Australian Automotive Parts Industry Holds Its Own

Repco Manager's Overseas Observations

That "leading automotive parts wholesalers in Australia compare more than favourably with their opposites in the U.S.A. and the U.K.", is the expressed opinion of Mr. C. G. McGrath, General Manager of Replacement Parts Pty. Ltd., on his recent return from the United States, the United Kingdom and Europe.

Mr. McGrath made an extensive survey of the automotive industry in these countries, with particular emphasis on the wholesale spare parts business.

Commenting on what he saw in the United States, he says:—

In the main "jobbers" as wholesalers are known over there, do not run into large concerns. This is especially so on the East Coast. They carry far less stock and do not provide the range of services familiar in Australia. Neither are their machine shops as large.

British wholesalers, called "factories" differ from the Australians in that they concentrate very largely upon accessories, tools and equipment, and do not provide machine shop service. Some of the bigger organisations, such as Brown Brothers, handle extensive quantities of tyres and oil.

General practice in the U.S.A. is to handle only one brand of petrol. In the U.K., however, service stations are similar to the Australians and carry a variety of brands.

Another revealing situation brought out by Mr. McGrath is that, service in the States has reverted to pre-war standard and a call into a petrol or "gas" station is a signal for extra attention, such as the cleaning of windows, windscreens, etc.

This year the U.S. motor industry, which is centered mainly around the Detroit region, has set up a production target of upwards of six million units. Mr. McGrath feels confident that in a smaller way and over the coming decade we in Australia are going to witness the building up of our motor industry similar to what took place in the U.S.A. in 1920 to 1930.

In Australia in the early thirties the parts manufacturer grew out of the specific needs of the automotive industry for replacement parts only. Now he ducts.

has the opportunity to supply for original equipment. It is easy to visualise the tremendous possibilities that this opens up and because of the greater quantity involved will enable more effective and more efficient tooling and will mean tremendous progress in the automotive parts industry.

Australia is producing a range of parts greater than any manufacturer at present catering for the Continental and United Kingdom markets. Australian cataloguing and packaging is the equal of other world manufacturers and we are also very competitive on price.

Mr. McGrath has the following heartening praise to offer to Australian producers of automotive machine tools.

Australian machine tools for the automotive industry are, in my opinion, equal in finish, superior in design and very competitive in price to any comparable line being offered in the U.K. and Continental markets. Provided Australia can further increase production there are very definite possibilities for sale of this type of merchandise in the U.K. and on the Continent.

This question of production is brought home to one, particularly when residing for a few short weeks in cities such as London and New York. In each of these there is a greater population than that in the whole of Australia. It is self evident, then, that for Australia to take full advantage of the unique possibilities now of becoming a first class industrial nation, it must have more people. We should all be conscious of this need and do our part in making the lot of the new immigrant to this country easier. Australia needs these people and her future prosperity and security depends on their being absorbed into this country and becoming true Australians.

The export possibilities for Australian manufacturers, particularly in the automotive field, exists because of the inability of various countries to obtain dollars. This position may not last, but now is the opportunity to establish brand lines and develop a permanent market for our products.

Precision Die Sets

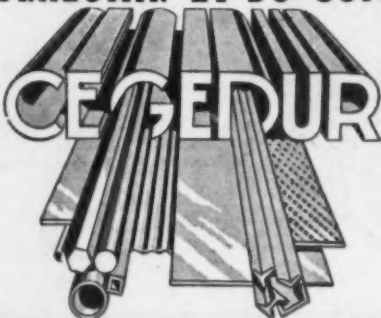
Manufactured by John Heine and Son Pty. Ltd.

Established some sixty-four years ago, the sheet metal and engineering works of John Heine and Son Pty. Ltd., Allen Street, Leichhardt, New South Wales, rank among the foremost of their kind, not only in the Mother State, but also in the whole Commonwealth.

Throughout their long exist-

ence, the main production has of course been can-making and sheet metal working machinery. The result is that to-day can-making and sheet metal working equipment bearing the John Heine brand is to be found in virtually every Australian plant where cans of one type or another are basic essentials.

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Agents — S.A.: Gilbert Lodge & Co. Ltd., cnr. Morphett and Franklin Streets, ADELAIDE.
W.A.: Western Machinery Co. Pty. Ltd., 494 Murray Street, PERTH. 'Phone: BA 2495.

About eighteen years ago, however, the company branched out in another important direction, when, after detailed planning and elaborate tooling-up, it commenced the manufacture of precision die sets for press tools. The special merit of these standard die sets rests on the fact that the alignment of the punch and die is set once and for all when the die is constructed. Other important advantages are longer life of cutting edges and more stampings between regrindings, this satisfactory state of affairs being the outcome of the high accuracy of die alignment and prevention of "chattering."

These precision die sets, production of which is being expanded to meet all requirements, are a standardised unit available in a range of sizes. They have been designed and engineered for the use of the press tool and die maker and, it is claimed, constitute the only efficient basis for all types of dies or press tools. Their use means better and cheaper die construction, plus quicker and safer die setting in presses.

Their appearance on the Australian market met with instant approval, which approval has never waned. Indeed, so widespread and so consistent has been the demand that not only has it been necessary to double the range of sizes, but, in addition, vast extensions have had to be made to the section of the works originally allotted to their production. Latterly, as a matter of fact, a 9,000 square feet annex

was constructed, with ample provision for additional expansion.

To-day, the John Heine plant at Leichhardt covers five acres, giving employment to upwards of four hundred workers, the majority of whom are highly skilled tradesmen.

Present-day operations include the production of machinery for sheet metal workers and stampers, coppermiths, tinsmiths, stove-makers, and canister makers. Also in production are presses and dies for punching, forming, and drawing sheet metal articles; tin canister and drum-making equipment; automatic can-making plants for the manufacture of cans to contain preserved foods; and double action presses for enamel and aluminium hollow-ware.

Precision is the watchword of the entire undertaking—as it has been from its beginning. It is evident in the plant lay-out; in the equipment installed; in the production methods employed; and in the meticulous care with which every phase of manufacture is planned and implemented.

RECORD COMPENSATION PAYMENT.

In the Workers' Compensation Court in Sydney recently Judge Lamond granted compensation amounting to £2,250 to a tyre moulder who was injured severely in an explosion in 1946. This constituted the largest award ever made by this Court.

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Novel Principle of Stepless Speed Variation

In a steplessly variable speed gear embodying an unusual principle, the co-axial input and output shafts of the gear each carry at their inner end a hardened steel disc. The peripheries of the discs bear against a series of hardened steel balls, which transmit the drive between the shafts.



Cut-away model shows the set of balls which transmit the drive between the input and output shafts.

The balls rotate on spindles normally parallel to the axis of the input and output shafts. In this position the diameters of the balls at the point of contact with each of the discs are equal, and therefore the output shaft runs at the same speed as the input shaft and in the same direction.

If, however, the balls are moved about their centres, so that their axes of rotation are tilted in relation to the axis of the shafts, the diameters of the balls at the point of contact with the driving

discs are different from those at the point of contact with the driven disc. A variation is thus obtained between the speeds of the input and output shafts.

Ends of the spindles carrying the balls engage radial slots in the housing, allowing movement of the spindles only in a plane at right angles to the shaft axis. Tilting movement is imparted to the spindles by a series of curved slots in a circular plate through which the ball spindles pass on one side. Angular movement of the plate by means of a lever projecting through the casing causes the balls to turn on their centres in a plane at right-angles to the shaft axis, the rates between the input and output speeds changing as the angle of inclination of the spindle axis increases.

Driving and driven discs are maintained against the balls by spring pressure. In addition, ball clutches are incorporated in the discs for the purpose of automatically increasing the pressure between the discs and the balls as the torque increases. The balls cannot move away under the influence of this pressure, since they are encircled by a hardened steel retaining ring.

The driving balls, the discs and the retaining rings are all made from En 31 steel hardened to Rockwell 63C. It will be evident that it is necessary for all the balls in a set to correspond in size within a close tolerance to ensure that the load is distributed between them. It is stated that the balls are lapped to within 0.00015 in. of the nominal size, and are round and concentric within the same amount.

Range of speed variation obtainable on the standard type is from one-third below input speed to three times above it—that is a ratio of 9 to 1. Thus, coupled to a constant speed, 1,500 r.p.m. motor, speeds from 500 to 4,500 r.p.m. could be obtained.

Seven sizes of this speed gear are made, the smallest to transmit 1 h.p. and the largest 12 h.p. It is claimed that the power transmission is constant over the whole range of speeds, that the mechanical efficiency is 90 per cent. and the slip in the region of 3 to 4 per cent. The unit is self-lubricated, requiring a change of oil every 1,000 hours.

Regulation of speed is obtained by movement of a hand lever on small models and by hand-wheel on larger sizes, though either can be adapted for remote control.

The variator can be supplied as a separate unit with free shafts or built on to a totally enclosed motor. [2577].

Fabric Processed Without Tension in Rope or Open-Width Form

A new machine for tensionless scouring of fabric in rope or open-width form is illustrated below.

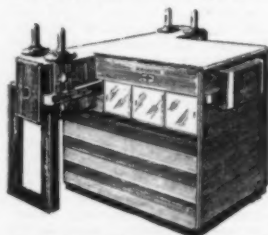
In this new unit, cloth is conveyed through the machine by means of multiple reels which are assembled on a single shaft. Each reel acts as an individual variable-speed drive which automatically adjusts to the amount of tension or slack that may occur in the preceding loop. The machine is constructed entirely of stainless steel and has squeeze rolls mounted at the entering and delivery end.

In the case of the rope washer, the tensionless effect is accomplished in the following manner. The multiple reels, which vary in number according to the application and size of the machine desired, are designed with resilient flexible surfaces. This design means that the peripheral speed or effective diameter of each of these carrying reels changes automatically to compensate for the amount of tension or slack occurring in the previous loop.

In other words, with cloth which shrinks during wet finishing, no tension can be built up because the flexible surface of the reel depresses below that of the preceding reel. If the tendency of the cloth is to stretch, the resilient or flexible surface expands to an effective diameter larger than the preceding reel.

The same principles are applied in the open-width machine; the cloth is conveyed by open-width units.

In neither case is it necessary to drive the bottom reel. Maintenance on the unit is said to be



Expanding and contracting reels are used in this washer to process fabric without tension.

negligible. Operation at speeds up to 500 yards per minute consistent with productive requirements are claimed.

The rope and open-width washers are applicable to caustic and peroxide washing in continuous-bleaching ranges, desizing, print washing, grey washing, and rinsing of cottons and synthetics after resin treatment, etc., and they neutralize woollens and worsteds.

The rope washer can also reverse the direction of the cloth during the scouring cycle. This feature is designed to make pos-

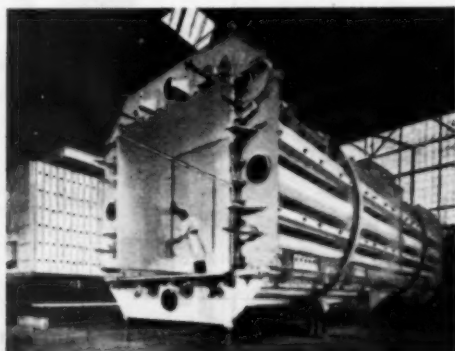
sible high-speed scouring even when the process requirements are only a fraction of the speed of the machine. [2557].

Industrial Accident Prevention System

Electrical engineering now helps to forestall industrial accidents. A very large number of industries use equipment such as power presses, guillotines, machines for milling, grinding, and welding, etc., which are potentially dangerous to human life and limb.

ally, of a warning system so adjusted electrically that only a defect in the guard system switches it on.

In practice, the device works as follows: a special circuit is superimposed on to the machine's normal electrical system. It contains, besides a transformer,



BIG JIG.

This 80,000-pound welding jig was designed by engineers in order to fill an order for ninety stainless-steel beer-fermenting tanks. Using the jig, workmen are able to roll the tanks, which are nine feet by ten by forty-five, into any position desired for the down-hand welding necessary to prevent leakage. [2552].

In all the advanced industrial countries, operatives on such machinery must by law be protected through the provision of suitable guards. No legislation, however, can insure that the guards work perfectly. Indeed, experience shows that really effective maintenance makes excessively heavy demands on both time and manpower. There has thus existed a need for a device to call attention to a defect in safety guards the moment it occurs. It is claimed that this need is met by a patented accident prevention system which consists, fundamen-

tally, of a warning system so adjusted electrically that only a defect in the guard system switches it on. In order, these switches allow no current to pass to the lamps. Immediately a defect occurs, current passes, the lamps light up, the main motor is cut off.

Several variants of the basic design exist. For instance, when a foreman or overseer is responsible for a group of machines, warning of failure in any one of them can be given in his office. Instead of a visual signal, an audible warning can be provided—an electric bell ringing at minute intervals. [2515].

Four Spindle Form and Cut-Off Machine

External forming, grooving, bevelling, chamfering and cutting-off of bar stock can all be carried out on the four-spindle machine shown on page 24. This machine is claimed to achieve a rate of production from 1,400 to 2,400 pieces per hour. Capacity in bar ma-

terial is 1 in. dia. maximum, with cut-off lengths up to 61 in.

New design of pneumatically operated bar feed mechanism is incorporated, which uses low air pressure to feed four 12 ft. bars simultaneously to four adjustable positive stops. Four sets of form-

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"Undark" luminescent materials, made in various grades, may be fluorescent, phosphorescent or self-luminous, the latter being radium-activated, and no light source is required for their use.

Furthermore, radium is available for research in the form of Neutron sources of radium, polonium, and radium "D". beryllium; Alpha sources of polonium; Beta sources of radium "D," as well as bulk radium, polonium or radium "D."

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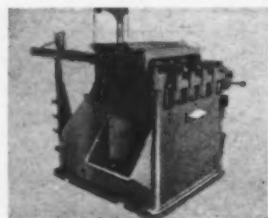
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And at Melbourne, Brisbane, Adelaide and Perth. Also Wellington and Auckland, New Zealand.

ing and cut-off tools are mounted as shown on a horizontal slide which is cam-operated longitudinally. Completed work falls through openings in table to the receiver.

Spindle speeds are steplessly variable from 900 to 2,000 r.p.m., the drive being from a 7½ h.p. Varidrive motor. Cycle changes are obtained by handwheel control and can be initiated without stopping the machine. An independent 1½ h.p. Varidrive motor is provided for the feed. Spindles are mounted on adjustable pre-loaded precision bearings at front and rear. Collets are of the push-in type.

Table feed cams are easily accessible by removing a single cover at the front of the unit.



High-speed production of formed, grooved, bevelled and chamfered work can be carried out with the Productio Bar-Matic machine, which will handle bar stock up to 1½ in. dia. with cut-off lengths up to 6½ in.

Slideways are protected at all times from chips, work or coolant. Special slides for drilling, tapping and chamfering holes can be supplied.

Coolant is circulated from a 20-gallon reservoir in the base by an independent motor-driven pump; and a large work and chip removal compartment is provided as shown in the illustration. [2547].

Factory Catering Turbulator

Heat engineering has solved a problem of large-scale catering. For such purposes as supplying quickly hundreds of hot drinks, 20-50 gallons (90-225 l) of boiling water may be required. To maintain a boiler of these capacities at 212 deg. F. (100 deg. C.) is wasteful, because as water approaches boiling point heat losses rise steeply, and evaporation causes rapid cooling. There is thus a need for an economic method of assuring large quantities of boiling water, for a short period of time.

A solution which has been devised consists, fundamentally, in the up-scaling of a principle familiar to small caterers, the turbulator. The bulk of the water is pre-heated, and brought to boiling point in small amounts by a boost heater on its way to the exit tap.

The large-scale turbulator works as follows: a cold water supply tank with a ball valve admits



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water into a storage cylinder. This is efficiently lagged and fitted with thermostatically controlled immersion heaters, which bring the water to, and hold it at 180 deg. F. (82.2 deg. C.).

When boiling water is required, the booster is turned on. It is situated at the bottom of a tube fed from the storage cylinder. When the water boils, it is forced upwards by its own steam into the draw-off chamber. Thus only boiling water comes from the exit tap; the remainder flows back to the pre-heater cylinder and helps to maintain the required temperature there.

Various models are made. The largest 35 gallon (157.51) size, with a 6 kW pre-heater, supplies 50 g. (225 l.) of boiling water an hour, but this output can be doubled by the use of a second booster. [2534].

All-Purpose Polishing Tool

While claimed to be no bigger and heavier than an ordinary flat-iron, a new bench tool can be used as a polisher, mixer, for drilling, grinding and buffing and in many other services with at the same time a range of domestic applications wide enough to make it a remarkably flexible and adaptable piece of equipment. It comprises a light, approximately cylindrical metal body, with a substantial plastic block handgrip carrying the switch, and an auxiliary folding grip pivoted on the axle of the body, at the end nearest the working shaft, to enable both hands to be used as required. For many of its services it is, of course, operated as a hand tool and a large number of accessories for drilling, grinding, polishing, buffing and numerous similar applications can be fitted to the shaft. At a convenient point on the body is a suitable flat base-plate which permits the machine to be mounted on a light but firm stand for mixing, polishing articles needing to be held by hand, and all work of this nature. Because of its adaptability therefore the makers are justified in claiming that its range of usefulness is outstanding and, though not primarily intended for production, many industrial concerns may be expected to find it a valuable addition to their stock of tools. Without the stand the new bench tool weighs about 6 lb., and the motor runs at 13,000 r.p.m. and develops one-sixth horse power under load. The spindle is driven through a worm reduction gear at a speed of 1,060 r.p.m. Power is taken from the ordinary lighting circuit and voltage ranges of 100-110, 200-220 and 230-250 can be covered while a radio interference suppressor is fitted as standard. The power consumption is 90 W when running free and 150 W when under load and it is evident that the combination of lightness, convenience and economy in operation achieved represents a notable advance in light electrical apparatus. [2561].



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When you use Bronzochrom 185 your metal remains in the dark, low range of 1,000-1,200° F. Ordinary bronze rods must be heated to 1,700° F., which explains why bronze welding failures are eliminated. Bronzochrom 185 has greater affinity for parent metal . . . bonds easily . . . has greater adherence, and you make more welds per pound. Bronzochrom 185 has a Brinell hardness of 180 and work hardens to 235 or more, compared with the softness of ordinary bronze rods. Its finished welds are smooth, tough and resistant to wear and tear. It's dense, non-porous and very easily machinable; has a low frictional co-efficient and highest corrosion resistance. Tensile strength and physical properties match those of cast-iron and steel and in addition narrower beads, less material and machining make the cost per weld lower.

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THE AUSTRALASIAN MANUFACTURER
[Page 26, September 9, 1950.]

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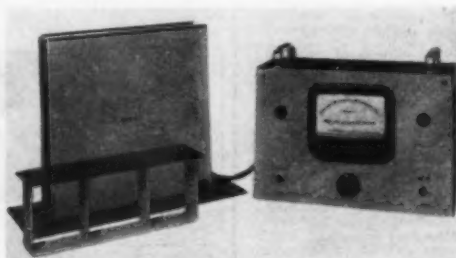
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Electronic Instrument Measures Moisture Content

A new electronic moisture meter designed for continuous use on raw wool, scoured wool, wool tops, noils, or yarn in skein form. has been developed. The instrument measures moisture content without making direct electrical

ates on alternating current. There is only one knob to adjust and this knob has a simple check position so that its accuracy is constantly maintained. Tests may be made on samples up to 2lb. in weight. It is stated that the



Moisture content can be measured instantaneously and accurately without direct contact by this new electronic instrument.

contact with the sample. Tests are said to take only a few seconds. The meter is not suitable for yarn in cheese, cop, or bobbin form.

The new instrument is said to be ten times more accurate than the average oven. Correct regain percentage is plainly marked on the dial. The instrument is simple in operation, and it oper-

meter is not affected by the wet or dry portions, but will register the percentage regain of the whole sample under test.

An actual calibration test is supplied with each instrument. This test records the weight and the regain per cent. of a wool sample with meter readings taken at various regain values. [2551].

Pneumatic Hand Tool for Crimping

A new air operated tool for crimping solderless terminals to wire is designed to combine the advantages of power press with the ease and flexibility of a hand tool, and is claimed to be of great advantage to car building and industrial plants, large machine tool industries, railroad rolling stocks, and hydro-electric and diesel shops.

The tool features detachable heads for either the conventional

side position crimp or end position crimping.

A suspension loop is attached to the top of the tool to enable it to be supported from above, and a double set of handles and triggers provide unusual versatility of operation. When tool is supported the operator uses the side handle, but when tool is being carried or lifted manually, the top handle and trigger are usually more convenient.

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Simultaneous Jolt-Squeeze Moulding Machines

New Development Features Uniform Density of Ramming

SIMULTANEOUS jolt-squeeze machines are designed on the principle of shockless jolting, and in their system of operation are

The force exerted is such that the piston, machine table, pattern plate, flask and sand are lifted to a pre-determined height. The supply of compressed air is then cut off and the air underneath the jolt piston exhausted. Immediately the air pressure is relieved the table with its load drops under its own weight until the underside comes into contact with a striking pad which is usually fixed to the cylinder of the machine.

As soon as the piston falls to the bottom of the cylinder the same cycle of operations is repeated, the jolting operation being continued until the sand has been packed down and rammed sufficiently hard to produce a satisfactory mould. The degree of mould hardness required is, of course, governed by the type of sand used and the type of metal (ferrous or non-ferrous) in which the casting is to be produced.

Speed and density of ramming are obviously dependent on the number of jolts or impacts made. It is also evident that the greater the number of impacts in a given time, the shorter becomes the individual ramming time for each mould and the greater the number of moulds produced per hour.

An important point is that the packing of sand in a flask takes place by building up from the face of the pattern plate to the top of the flask, so that if a section of a finished mould is examined it will be found that throughout the depth of the mould a variation in the density of ramming has occurred. This feature which cannot be avoided with a shock-jolt-squeeze machine, has been eliminated by

the simultaneous jolt-squeeze moulding machine.

A British machine of the latter type is described by A. G. Thomson

operates in an external squeeze body.

On the introduction of compressed air to the underside of the jolt

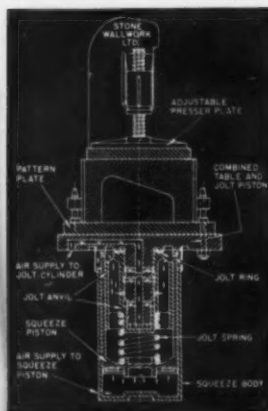


Fig. 1. Ramming unit in simultaneous jolt-squeeze position.

fundamentally different from the usual shock-jolt plain-squeeze machines.

On a shock-jolt machine of the normal type the pattern plate is fixed to the machine table. The flask is located on the pattern plate and filled with sand. Jolting is then carried out by admitting compressed air underneath the jolt piston, usually at a pressure of from 80 to 100 psi.



Fig. 2. Simultaneous jolt-squeeze rollover draw machine operating with flask approximately 4 ft. square.



Fig. 3. Swing heads in position while jolt and squeeze operation is being performed simultaneously.

in "The Foundry" and is shown in Fig. 1. It will be seen that the jolt piston operates in an anvil and an important difference from the

piston, the table lifts and at the same time the anvil operating inside the squeeze piston depresses the jolt spring until a balanced



Fig. 4. Machine is turned over and pattern draw is commencing.

shock jolt machine is that this anvil rests upon a heavy coiled spring. This spring in turn rests inside the squeeze cylinder which

loading occurs. At this point the air supply to the jolt cylinder is cut off by a system of porting, and (Turn to page 48.)



Fig. 5. Removing the finished mould from the machine.

Toroid Serves Industry

Quality Achieved by Specialisation

Specialisation has become one of the main principles in Modern Industry and it is by concentrating upon certain essential elements in the mechanical field that Toroid Industrial Supplies Pty. Ltd. have become widely known throughout Australia and New Zealand as suppliers of Toroid Steam Traps and associated equipment.

By specialising in the design and manufacture of this apparatus which covers a restricted field, it has been possible for the Company to engage in very extensive research within this field and, as a result, the product represents a considerable achievement when judged by world standards.

IN the case of such units as the Toroid Impulse Steam Trap which involves the utilisation of an ingeniously contrived principle, the subject of World Patents, an examination in detail is well worth while.



Toroid Compressed Air After-cooler.

The problem of disposing of condensate simply and effectively without undue loss of steam is one which has engaged the minds and research facilities of engineers for a great number of years.

Many steam traps of varying degrees of efficiency have been designed and placed on the market from time to time. Of these a number have been of comparatively involved construction with many wearing parts, while others have tended to extreme limitation in application.

The Toroid Impulse Steam Trap, as the latest to enter the field on the other hand has had the advantage it is claimed of many years of enquiry and research into this problem.

The Toroid Steam Trap is designed with one simple moving part which has two positions—fully open passing condensate at a high rate—or completely closed and fast to all steam. Merely to observe it functioning provides convincing evidence of its out-

standingly high efficiency and sound design.

Tests carried out by the Melbourne Technical College, have demonstrated conclusively the exceptional low steam loss which occurs in the functioning of the Toroid Impulse Steam Trap. As steam loss is always highest on light condensate loads, these tests were purposely carried out under conditions of relatively "dry" steam to fully test the unit.

PRINCIPLES OF OPERATION.

In commencing to function the valve of the Toroid Steam Trap is lifted off its seats by any line pressure above that of the atmosphere, allowing condensate to pass through the inbuilt strainer and central inlet orifice into the bowl of the Trap.

The condensate then passes through an outlet orifice from the bowl into the outlet line. The valve then remains in a fully open position, discharging condensate at capacity until the entry of steam into the Trap.

The steam, in passing through the inlet orifice at a much higher rate than the condensate, momentarily raises the pressure over the whole of the Trap to that of the line, and is assisted in so doing by a temporary water seal over the outlet orifice. The gravitational fall of the valve to its seat then occurs, this movement being further accelerated by radial flow across its face, causing a sucking-down effect, giving positive

closing with negligible loss of steam.

The valve then remains closed until pressure trapped in the top chamber (and acting downward with greater mechanical advantage than the line pressure acting upwards over the area of the inlet orifice), is relieved through the leakage orifice passing through the central spigot of the valve. This leakage orifice controls the cycle of operation of the Trap and is of such area that the valve remains closed for a period of from 8 to 30 seconds.

Functioning satisfactorily on a very light condensate load with exceptionally low steam loss, the Toroid Impulse Steam Trap decreases steam loss further as the condensate load increases. The standard trap will operate efficiently at any pressure from 2 lb. to 150 lb. per sq. in. without adjustment while traps for very low or high pressure work are also available.

Requiring no attention or adjustment under any condition of load or pressure, the Toroid Impulse Steam Trap passes air rapidly and is not subject to air-binding or steam-locking. Its practically continuous draining feature permits closest temperature control.

The unit, which is compact, neat, and of attractive design, is simply installed and will lift condensate two feet for every pound per square inch above one pound at the inlet, and discharge it at atmospheric pressure. The Toroid Impulse Steam Trap may be serviced without removal from the line, and complete sets of re-

placement parts are always available.

TOROID COMPRESSED AIR AFTER-COOLERS

Compressor manufacturers for many years have endeavoured without much success to provide equipment which will ensure the delivery of dry, oil-free, and clean



"S" Rotor Ventilator.

compressed air direct from their compressor installations.

The orthodox multi-tubular type of After-cooler is mainly the result of an endeavour to eliminate moisture and oil from compressed air but cooling alone does not positively eliminate moisture and oil except that which is heavy enough to settle by means of gravitation.

In normal applications when quite high velocities exist in the multi-tubular type of After-coolers, a considerable amount of moisture and oil in the form of a fine mist, which is too light to settle out, is carried past the After-cooler into the air lines, eventually to become a source of considerable trouble to tools and work. In such applications as Shot, Sand and Grit blasting, paint spraying, etc., the removal of moisture and oil from compressed air is imperative and for this purpose the Toroid After-cooler Drier Unit was perfected.

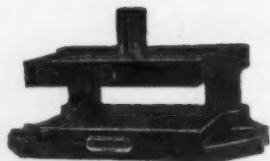


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TOROID AFTER-COOLER DRYER UNIT.

The outcome of considerable research into the problem of positively removing Moisture, Oil, and Foreign Matter from Compressed Air, the Toroid After-cooler Dryer Unit consists of a water-jacketed air pressure cylinder into which air from the compressor mains is admitted at a velocity of approximately 5,000 feet per minute and rotated at over 3,000 revolutions per minute.

Centrifugal force, acting on the particles of liquid being formed in the air by temperature reduction, causes them to be deposited on the inner walls of the pressure cylinder.

The separation effect in the Toroid unit is approximately 800 times that of gravity and continues—a most important feature—until after the air temperature has been reduced, in normal applications, to the proximity of atmospheric temperature. This means that, unless the air temperature is again reduced considerably below atmosphere by some artificial means, further deposition of moisture and oil cannot possibly occur.

An inner tube keeps the downward helical flow of air close to the pressure cylinder walls and thereby assists in the deposition of liquid. Air, in travelling upwards towards the exit pipe, continues to rotate inside the inner tube and, being at a low temperature and thoroughly dry, assists the cooling water in the water jacket to cool the incoming air. This heating of outgoing air has obvious advantages, besides that of effecting a saving in cooling water requirements.

Because of the relatively large diameter of the central tube the upward velocity of the air, which is approximately 200 feet per minute, is much too slow to carry moisture, oil and sludge already separated out.

The rate of heat-transfer from air to water is remarkably high in the Toroid After-cooler Dryer Unit, due to the large area of effective heat-transfer surface. The rotating air passes approximately twenty times over the inside surface of the pressure cylinder wall at a very high velocity as compared with Multi-tubular type After-coolers and it is this fact that accounts for the high rate heat-transfer of the Toroid Unit.

When it is desired to cool, dry and clean a greater quantity of air than the capacity of the standard single Toroid unit permits, these units may be connected in parallel into appropriate sized air, water and drainage headers. Such arrangement ensures maintenance of high velocities and consequent efficiency of heat-transfer and moisture and oil separation.

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First introduced commercially by the Th. Goldschmidt, A.G. Essen, after many years of intense research and practical experimentation, this alloy was quickly accepted by the industrial world in Europe as showing remarkable savings compared with high tin-content alloys and is manufactured in Great Britain solely by Murex Limited under the trade name of "Eel" Brand.

Used for bearings in Steel Works, Rolling Mills, Marine Engines, Diesel Motors, Locomotives, Railway Rolling Stock, Tramways, Cement Works, Paper Factories, Mines, Briquette Factories, Automobiles, Steam Engines, etc., an interesting comparative table is available from Toroid Industrial Supplies Pty. Ltd., which gives the relative physical and mechanical properties of this versatile metal as compared to two tin-base metals.

Casting instruction booklets are available for those who require them. In addition to the necessary tinning materials and fluxes, a special pouring pot is also available to clients which facilitates the pouring of bearings.

OTHER PRODUCTIONS.

In addition to manufacturing steam oil-water separators, lubricating oil coolers and moisture and oil traps for paint spraying, Toroid Industrial Supply Pty. Ltd., are the Sole Victorian Agents for "S" Rotor Ventilators.


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The Ventilator in no way depends on the variation between the in-

(Turn to page 33.)

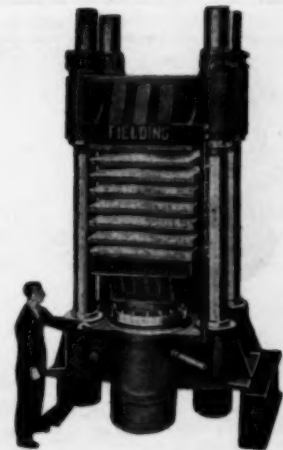


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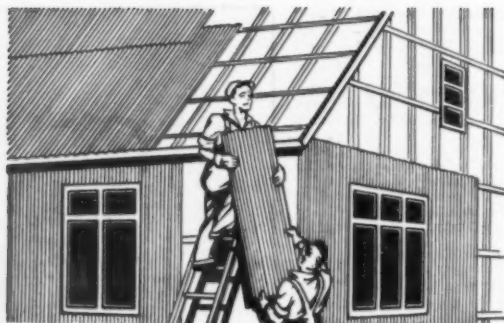
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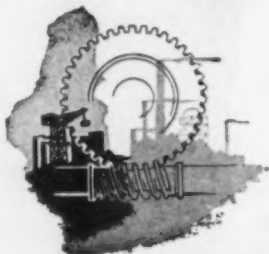
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(Continued from page 31.)

ternal and external air temperatures as do orthodox cowl type ventilators and its functioning is similar to that of mechanical exhaust fans with the exception that it is wind driven.

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To aid manufacturers in installing the correct equipment in the proper manner for each application, an advisory service is maintained by Toroid Industrial Supplies Pty. Ltd., for the guidance and information of clients. Staffed by competent engineers and backed by a skilled research staff fully abreast of all modern overseas developments, this service ensures that all installations and products are the most modern and efficient available.

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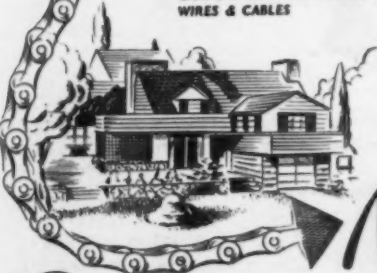
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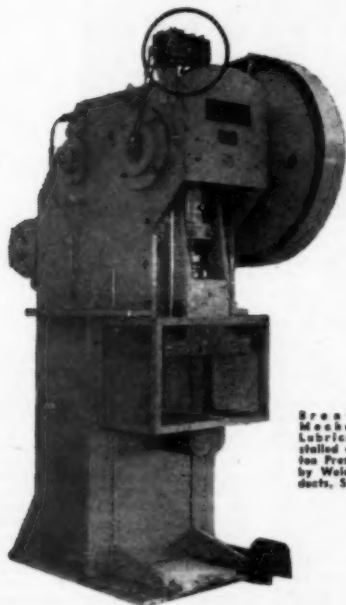
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INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the inquirer.

POWER BENDING MACHINE WANTED: If you can supply a Power Bending Machine for Tubular Furniture, write to Ref. 8271, c/o "The Australasian Manufacturer." Inspection arranged anywhere in Australia.

STORAGE BATTERY EQUIPMENT WANTED: New Zealand firm desires to purchase Battery Platemaking equipment; also separator and smelting equipment. If you can supply, write to Ref. 8272, c/o "The Australasian Manufacturer."

ELECTRICAL ACCESSORIES AND ARTIFICER'S TOOLS: New Zealand manufacturer of Electrical, Radio and Wiring Accessories and also Artificer's Tools, will shortly visit Australia with the object of contacting firms who may be interested in his Company's products. Organisations interested in this inquiry are asked to write to Ref. 8273, c/o "The Australasian Manufacturer."

ELECTRIC MOTOR, 10-H.P., Single Phase, with Starter. Available, re-conditioned. Write for further particulars and price to Ref. 8577, c/o "The Australasian Manufacturer."

SURPLUS MATERIALS FOR SALE: Sydney firm has available 25,000 feet of 1 in. x 22G Tuogum Tubing. They also have 1,000 lbs. of Double Cotton Enamelled Wire, 26G, B. & S. If interested in purchasing this material, write to "Materials Supervisor," Box 1687, G.P.O., Sydney.

TAIL-BOARD HOISTS: Tasmanian firm desires to contact an Australian manufacturer making a Tail-board Hoist, particularly for handling heavy and awkward loads, the hoists to be driven from a power take-off. Write to Ref. 8269, c/o "The Australasian Manufacturer."

FILTERS AND FILTER APPARATUS — MANUFACTURING OPPORTUNITY: European manufacturer of Filters and Filter-Apparatus for Gases and Liquids, is prepared to grant manufacturing rights to an Australian manufacturer under very attractive conditions. If interested, write to Ref. 8266, c/o "The Australasian Manufacturer."

MANUFACTURERS — S. A. REPRESENTATION: An established firm of Importers and Merchants is desirous of expanding their Australian connections, and wish to contact Australian Manufacturers who are not satisfactorily represented in South Australia. All types of merchandise required, especially Hardware, Machinery, Chemicals, Food products and by-products, Piece goods, etc. Write Ref. 8268, c/o "The Australasian Manufacturer."

NON - CORROSIVE BALLS WANTED: Sydney firm wants to buy supplies of non-corrosive balls 3/16 in. diameter—phosphor bronze or stainless steel—up to 30 gross required. Write to Ref. 8267, c/o "The Australasian Manufacturer."

MACHINE TOOLS WANTED: Sydney manufacturing company wishes to purchase the following machines: 10 ton Power Press, Hand Screw Presses, Surface Grinder, Universal Miller, and a Pedestal Drill to take up to 11 in. drills. Machines must be in good condition. Ref. 8261, c/o "The Australasian Manufacturer."

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PLANT FOR SALE: Due to the installation of larger plant, the following items are available for disposal: G.E.C. Alternator, 94 K.V.A., 75 K.W., 3 Phase, 750 R.P.M., 50 Cycles, 131 Amps., 3 P.F. Direct Coupled Excitor, excitation 125 V., 16.5 Amps. Pulleys to suit drive by G.M. unit. Also sundry Electrical Equipment to suit above plant. Apply to Mr. Clapham, Slazengers (Australia) Pty. Ltd., Bowden Street, Alexandria, New South Wales. 'Phone No., MX1511.

MANUFACTURE OF MEDICAL AND DOMESTIC RUBBER GOODS AND RUBBER TOYS: A Dutch firm which manufactures medical, surgical and domestic rubber goods and rubber toys wishes to engage in the production of such commodities in Australia, and is interested in partnership or other form of business association with a similar existing establishment in this country. Firms interested in this inquiry to write to Ref. 8263, c/o "The Australasian Manufacturer."

LEAD LADLES: Manufacturers of Lead Ladles are invited to communicate with Ref. 8262, c/o "The Australasian Manufacturer."

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TAKES UP BAKERY APPOINTMENT.

Mr. D. E. Mead, former president of the Winemakers' Association of S.A. and general manager of Penfolds Wines Pty. Ltd. at Magill, has become general manager of Northern Bakeries Pty. Ltd., a large bakery chain business in Melbourne. This business recently became part of the group controlled in Australia by the George Weston interests from U.S.A., with which Parker Bros. Ltd., of Adelaide, also is associated.

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UTILISING ATOMIC ENERGY BY-PRODUCTS.

Recent weeks witnessed the holding of a conference in Melbourne of scientists from all parts of Australia to discuss ways and means of utilising isotopes—by-products of British and American atomic energy piles—to assist research. The gathering was sponsored by the University of Melbourne and the Commonwealth Scientific and Industrial Research Organisation. All branches of research, from entomology and botany to metallurgy and chemistry were covered, delegates visiting laboratories using isotopes. These isotopes, which result from atomic disintegration, can be used for such widely differing purposes as examining the way in which a plant draws its

food from the soil or tracing the course of a complex chemical reaction.

SPECIAL ELECTRIC FURNACE FOR AUSTRALIA.

To help Australia's electrification programme, the Westinghouse Electric Corporation of America, has just shipped to this country a high temperature electric furnace.

A Westinghouse official said that the furnace is for Lysaghts at Newcastle and will be used to anneal high silicon content steel, which is essential in the production of power transformers.

The furnace is the largest ever shipped to Australia by Westinghouse and is capable of heating 50,000 lb. of steel to a temperature

of 2,000 degrees in 70 hours. It weighs 102,000 lb.

Lysaght's senior research officer, Mr. D. I. Cameron, toured American installations of similar furnaces this year and consulted with Westinghouse engineers on the design of the Australian furnace.

NEW APPOINTMENTS TO C.S.I.R.O.

The appointment of the following new members to C.S.I.R.O. Advisory Council and State Committees is announced:—

New South Wales: Professor J. P. Baxter, O.B.E., B.Sc., Ph.D., M.I.Chem.E., Department of Chemical Engineering, N.S.W. University of Technology; and Professor D. M. Myers, B.Sc., D.Sc., A.M.I.E.E., A.M.I.E., Department

of Electrical Engineering, University of Sydney

South Australia: Professor J. G. Wood, Ph.D., D.Sc., Department of Botany, University of Adelaide.

Victoria: Mr. D. T. Boyd, Chairman of the Australian Wood Board, and Mr. G. B. O'Malley, B.Met.E., metallurgist.

I.C.I. APPOINTMENTS.

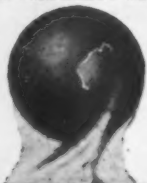
Mr. E. Sorensen has been appointed commercial general manager, and Mr. J. R. A. Glenn technical general manager of Imperial Chemical Industries of Australia and New Zealand Ltd. These are new posts which have been created within the company. Mr. Sorensen will continue as secretary of I.C.I.A.N.Z.

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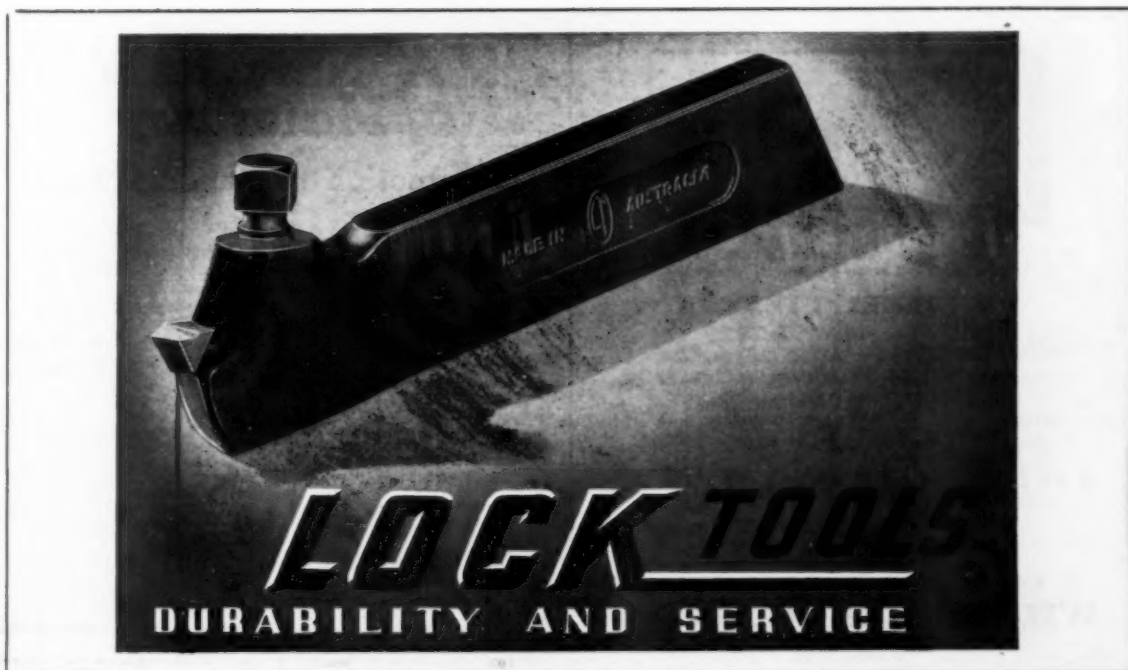
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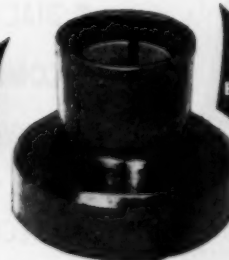
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A New Raw Material

Production of Sebacic Acid

The announcement that a plant for the production of sebacic acid will soon come into operation at Manchester, England, is of particular interest to a wide section of the chemical industry, especially those branches concerned with the manufacture of plastics, surface coatings and synthetic fibres. The new development has resulted from the collaboration of a well-known manufacturer of dyestuffs and a wide range of plasticizers, with the leading manufacturer of sebacic acid and related products in America.

The production of sebacic acid and capryl alcohol, together with several other valuable by-products, by the break-down of castor oil is of particular interest, even in these days when advances in chemical synthesis are so rapid. Coal and oil, the raw materials on which the chemist now mainly relies, are the results of centuries of gradual aggregation or polymerization of cellulosic matter; but castor oil, the yellow fluid extracted from the seeds of the *Ricinus communis* or Palma Christi, is indigenous and rapid growing in several parts of the British Commonwealth. The chemurgic as well as the economic aspects of the new development are of particular interest to Great Britain, since not only will the production of the new range of chemicals and polymers derived from sebacic acid make her independent of dollar imports, but this use of the raw material will increase her trade with the colonial territories.

The new plant will be capable of splitting large quantities of castor oil annually; consequently the products are not merely fine chemicals but are manufactured in bulk tonnage for use on an industrial scale. The break-down of castor oil is furthermore of value to the chemist in that the general structure of the products could not be obtained from other natural sources such as coal or oil. The plans for the manufacture of these new products are thus complementary to those now being applied to the production of chemicals, from petroleum, and it is expected that many valuable chemicals will be obtained by the combination of materials from these two sources.

The main product of the break-down of castor oil is sebacic acid, a white crystalline compound which melts at 130 deg. C. It is the highest member of the series of aliphatic dicarboxylic acids for which there is a preparative method suitable for industrial production and it imparts to its derivatives a much higher degree of elasticity or plasticizing efficiency than the dibasic acids,

such as the aromatic phthalic acid, now commonly used. Sebacic acid is therefore much more than a minority ingredient to be used only when more conventional products are not available. It is not a substitute material but one with intrinsic possibilities. It has the general properties which can be anticipated from its structure and it can be readily esterified with alcohols to yield mono- and di-esters, and with glycols to yield polyesters. With thionyl chloride it gives an 83 per cent. yield of the acid dichloride and on heating with urea an 85 per cent. yield of the diamide.

Sebacic acid and its derivatives already have several commercial applications; their esters are useful as plasticizers for natural and synthetic polymers and in this direction their production will be integrated with the company's plasticizer production. The flow of material will similarly meet the increasing plasticizing needs of the United Kingdom, which are contingent on the growing production and use of the vinyl polymers. Polyamides and polyester-amides are valuable raw materials in producing man-made fibres, elastomers, surface coatings, and adhesives, the new materials also find application in the formulation of synthetic waxes, rubber chemicals, pharmaceuticals, and dyestuffs. Copper sebacate has possibilities as a fungicide for crop spraying and cobalt sebacate as a dryer for printing inks.

At present, writes Dr. V. E. Yarsley in "The Times Review of Industry", there are three main applications of dibasic acids in the plastics and related industry. They are:

- (1) The production of monomeric high-boiling esters as plasticizers;
 - (2) The production of polyesters, of which the alkyls are typical examples; and
 - (3) The production of polyamides of the nylon family.
- For the first two of these applications, phthalic acid is by far the most widely used dibasic acid, while for the last adipic acid is of primary importance; but in

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all three applications sebacic acid has already proved its potentialities. The outstanding characteristics of the phthalic polyesters are hardness and toughness; of the polysebacates they are flexibility and extensibility—as will be readily appreciated from a careful consideration of the structure of the respective acids.

Hitherto, non-drying phthalic alkyds have been widely used as plasticizers for cellulose nitrate and u.f. resins because of their non-volatility, freedom from any tendency to migrate, and the high gloss and hardness of the resulting films. Non-drying sebacic alkyds, while possessing all the advantages of the phthalic types, are also much more efficient plasticizers. In regard to u.f. resins the sebacic alkyds are found to be at least twice as effective as phthalic alkyds, which means not only that the proportional addition of the more expensive ingredient is reduced but that the colour and colour retention of the plastic are improved. In the field of air-drying alkyds the phthalic-based products are likely to retain their superiority, although the addition of a small proportion of sebacic acid to a drying phthalic alkyd improves its film flexibility without impairing the hardness which is its natural characteristic.

Although it is not used to any great extent in England at present, in the production of nylon, sebacic acid has a decided potential in this field. The dibasic acid used here is adipic acid—related to sebacic but having a shorter methylene group chain—which has the advantage of being the link in the production of the diamine used, so that in effect both are phenol based via cyclohexanone; along this line it requires about one ton of phenol to produce one ton of nylon. With current nylon production in Great Britain at about 5,000 tons a year, and current phenol production (natural and synthetic) at 14,000 tons to meet the demands of plastics, dyestuffs, and general synthetics, the difficulty of the situation is at once apparent. There can thus be no question of the economic demand here for an alternative to adipic acid, especially as nylon based on sebacic acid has specific properties which make it suitable for the technical uses of nylon.

Apart from several useful by-products which have not yet been



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fully explored, the new plant will also produce capryl alcohol. This variety of octyl alcohol has a boiling range of 173-178 deg. C., and besides leading to the established series of octyl ester plasticizers, is a solvent for u.f. and polyvinyl acetal resins; it also improves the flow of lacquers in which these resins are used. Capryl alcohol can also be used in place

of butanol as an etherifying agent in preparing lacquer grade u.f. resins, and in the formulation of anti-foaming compositions.

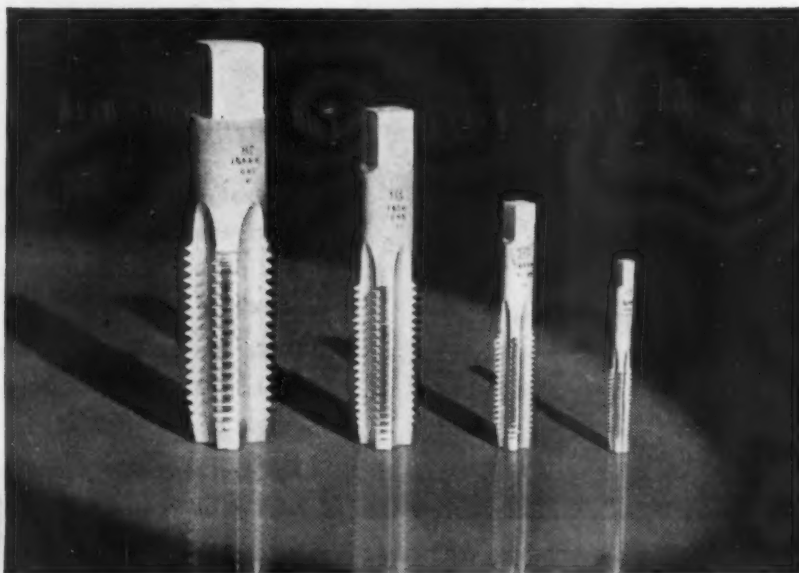
In this brief survey it has been possible to describe only the salient points of the development. The new plant, which will be the only one operating outside the United States, will be able to supply Europe and the Common-

wealth as well as the home market.

DEATH OF MR. R. BELL

The death occurred in Melbourne last week of Mr. R. Bell, managing director of Bell & Valentine Pty. Ltd. Under Mr. Bell's direction, his firm constructed the first news press to be built in Australia.

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HUGE VICTORIAN POWER SCHEME.

The Minister for Electrical Undertakings, Mr. Dogshun, announced recently that the State Electricity Commission of Victoria proposes to extend its area of supply along the entire Murray Valley to the borders of South Australia. The plan includes the construction of a 220,000-volt, transmission line from Kiewa to Mildura by way of Shepparton and Swan Hill, together with the erection of Diesel-operated regional power stations at Mildura, Swan Hill, and Shepparton. At present day costs, the project envisages an expenditure of £6,500,000, to be spread over the next fifteen years. Each of the new regional power stations is expected to cost £1,000,000; £2,500,000 for the transmission line; and £800,000 extra will be required for 220,000-volt, distribution sub-stations at Mildura, Swan Hill, and Shepparton.

DECLINE IN PRODUCTION OF HOSIERY.

Figures issued by the Commonwealth Statistician, Dr. Roland Wilson, reveal that Australia is making fewer women's stockings now than before the war and importing many more.

In 1938-1939 Australian mills produced 2,136,000 dozen pairs, but in 1948-1949 the output was only 1,536,549 dozen pairs. Because of higher prices, the 1948-1949 production was valued at £4,622,738, compared with £2,676,122 for the last pre-war year.

COMMONWEALTH ENGINEERING CO. FORGES NEW LINK.

The Commonwealth Engineering Co. Ltd., Granville, New South Wales, by joining forces with J. A. Lawton and Sons Ltd., Adelaide, has forged another important link in its interstate chain. It has acquired a share interest in the Adelaide enterprise and appointed its nominees to the board of directors. Henceforward J. A. Lawton and Sons Ltd. will act as Commonwealth Engineering's manufacturing representatives in South Australia. It will be recalled that about a year ago Commonwealth Engineering linked its activities with those of Evans Deakin and Co. Ltd., Brisbane, one of Australia's leading engineering and shipbuilding plants. This subsidiary, Commonwealth Engineering (Queensland) Ltd., is now working on contracts for rolling stock for the Queensland Government Railways.

TO MANUFACTURE CONCRETE GLAZED TILES.

A large English manufacturer of concrete glazed tiles, Redland Tiles Ltd., is stated to be sponsoring the formation of a company in Sydney.

Already a factory here is in course of erection at Fairfield.

Plant required for a substantial output of high-class tiles is being constructed in England.

Production is expected to commence at a relatively early date.

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TASMANIA: Mr. Eric T. Meagher, Macrow's Building, 147 Liverpool Street HOBART, TASMANIA		NEW ZEALAND: Messrs. D. J. Robertson Co. Ltd., 64 Stafford Street TIMARU, N.Z.	

Precision Plastic Parts

Types of Moulds and their Design, and the Selection of Materials

There are various ways of classifying plastic moulds. The most common is to refer to them by types, such as compression moulds, transfer moulds, and injection moulds. Another form of classification is based on the kinds of materials for which they are to be used, namely, moulds for thermo-setting materials and moulds for thermo-plastic materials. Such a classification immediately separates compression and transfer moulds into one group, and injection moulds into another. The former are more adaptable to the production of precision parts, using thermo-setting materials, while the latter are used with thermo-plastic materials when high production at low unit cost is desired.

THERMO-PLASTIC materials do not take a permanent set when subjected to heat and pressure, and the curing time, which is the time required for the material to harden, is usually quite short. The acrylic, styrene, and vinyl plastics, and nylon and ethyl cellulose are

common examples of thermo-plastic materials.

The thermo-setting materials, on the other hand, retain the shape in which they are cast because of a chemical reaction which takes place during the curing cycle. They require heat and pressure to render them plastic, and heat to harden them.

Of the two methods of moulding thermo-setting materials — compression and transfer moulding — the former is the older and the more extensively used, due to the low cost of the mould. The moulding compound is placed in a heated mould, with the inserts, if any, in position. When the compound softens and becomes plastic, the top block moves down and compresses the material to the required density with a pressure of 1 ton to 3 tons per sq. in. With continued heat and pressure the material hardens by chemical reaction.

The time required for curing or polymerization depends principally upon the size of the largest cross-section of the part and upon the type of moulding compound which is being used. Less than a minute or several minutes may elapse before the part is adequately cured and ready to be ejected from the cavity. The common method of determining whether or not a part has been properly cured is to test it with acetone. If there is no reaction to this test, the curing time has been sufficient.

BASIC TYPES OF COMPRESSION Moulds.

There are four basic types of compression moulds, namely, positive moulds, landed positive moulds, semi-positive moulds, and flash type moulds, as shown diagrammatically in Fig. 1. In a positive type mould, the plunger, or top block, acts directly on the charge. There are no lands or stops on the bottom block or on the matrix to limit the travel of the plunger. With the proper clearance between the bottom and top mould blocks, the moulding material is completely trapped, and a dense part with good electrical and physical properties is obtained.

The amount of material in the mould cavity determines the thickness of the piece. If a multi-cavity mould is used, the charges must

be equal, otherwise, the parts will vary in thickness or in density. With a single-cavity mould, successive charges should be accurately weighed to ensure that the parts will not vary. One way of overcoming these variations is to use plastic preforms. Besides ensuring an accurate charge, they facilitate handling, and they can be preheated in a high-frequency generator to reduce moulding time.

Another method of overcoming variations in mould charges is to increase the clearance between the top block and the matrix. During

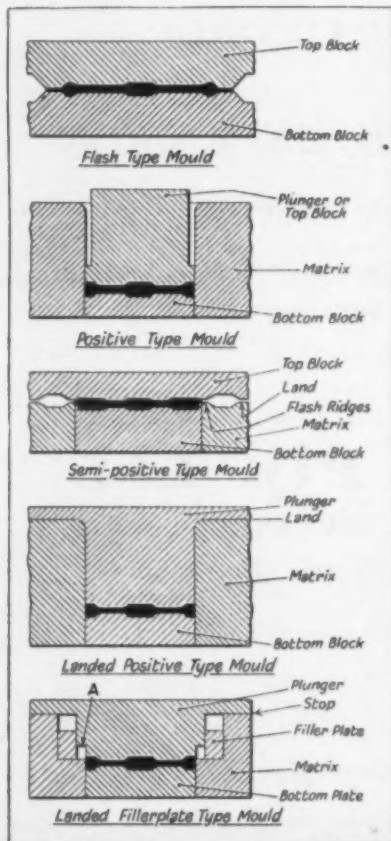


Fig. 1. The basic types of compression moulds are positive moulds, landed positive moulds, semi-positive moulds, and flash moulds. The landed filler-plate flash mould is a variation of the semi-positive mould, and is widely used.

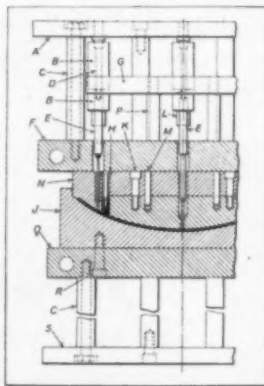


Fig. 2. Section of compression type, landed plunger mould for plastic handles. The parts of this mould are as follows: (A) Top-mounting plate; (B) Stripper plate; (C) Parallel; (D) Cap-screw; (E) Stripper Pin holder; (F) Top steam plate; (G) Safety strap; (H) Mould insert; (I) Cap-screw; (J) Bumper pin; (K) Dowel-pin; (L) Top die; (M) Safety pin; (N) Bottom steam plate; (O) Dowel-pin; (P) Bottom mounting plate; and (Q) Bottom die.

the moulding cycle, a vertical flash or fin forms as the material flows into this clearance. This type of mould is sometimes known as a positive flash mould.

A landed positive mould is similar to the fully positive type except that lands are incorporated in

the design to stop the travel of the plunger at a predetermined point. Such lands absorb the pressure that should be exerted on the material, and while the thickness of the part is accurately controlled, the density and consequently the physical and electrical characteristics, may vary.



Fig. 3. When the desired production rate is high and the number of parts required large, multi-cavity moulds can be economically employed. A 48-cavity compression mould is shown here.

In the flash type mould, flash ridges are added to the top and bottom blocks. As the top block, or plunger, exerts pressure on the material, any excess is forced out of the mould cavity and between the flash ridges, where it forms a very thin fin. As the two mould halves continue to come together this fin begins to cure, and since it is thin, it hardens much sooner than the main mould charge. The harder the flash or fin becomes, the more it prevents escape of the mould charge, until finally the flashing out process stops. This type of mould is widely used not only because it is comparatively simple to construct, but also because it holds part thickness and density within close limits. It is therefore well suited for use in applications where multiple-cavity moulds are desirable, since it tends to equalise any slight difference in the weight of the charges.

The semi positive mould is a combination of the flash type and landed positive type moulds. In addition to the flash ridges, a land is employed to restrict the travel of the plunger. While some of the force of the press is taken by the lands, much of it is exerted on the part being moulded. The amount of clearance between the ridges regulates the thickness of the flash and controls to a large extent the density of the moulded part.

There are, of course, variations of these four basic types of compression moulds. For example, writes J. J. Johnescu in "Machinery", there is the landed filler-plate flash type mould shown in the bottom view of Fig. 1. This is in many respects similar to the semi-positive mould. The flash is horizontal and located at the top edge of the moulded part. The plunger is relieved at A, so that there is no

pressure on the flash ridges, but the flash is practically pinched off by the small clearance between plunger and matrix.

The plunger is restricted in its downward travel by stops which may be part of the mould matrix or of the bottom mould block. The filler plate acts as a guide for the

plunger and provides a deeper well for the material. However, in some cases, it may not provide a sufficient guide for the plunger, and guide pins may be required to line up the top and bottom mould members.

When the part to be moulded is large, a loading plate may be used with any of the compression moulds. This plate is bored to the same diameter as the plunger, and rests on the top of the bottom block or the matrix, but is carried up with the plunger, or top mould member, when the press opens. The advantage of such a plate is that the mould cavity can be made shallow, and machining or hobbing costs are thereby reduced. It may be necessary to make the mould in sections to permit release of the moulded part or to reduce mould manufacturing and maintenance costs.

A sectional view through part of a six-cavity, compression type, landed plunger mould which is employed for the production of a plastic handle for an electric cooker is shown in Fig. 2. Material is loaded in each end of the bottom mould, the pressure of the ram forcing it to flow throughout the cavity. After curing, the mould is opened and the parts stripped by stripper pins extending through the top mould member. Cap-screws are used to hold the top and bottom mould members to the top and bottom steam plates. Since the pressure required to open the mould is only a fraction of the moulding pressure, the cap-screws suffice to retain the members in position.

As many as forty-eight cavities may be employed in a single mould, as shown in Fig. 3, or double-deck moulds, which are multiple-cavity moulds placed one above the other

in the same press, may be economically used if large quantities are required.

TYPES OF TRANSFER MOULDS.

When a part of intricate shape, containing delicate inserts, is to be moulded, it is usually preferable to use a transfer mould, since there is less tendency for the inserts to be deformed. Also, some dimensions can be held to closer tolerances in a transfer mould than in a compression mould.

Transfer moulding acquires its name from the fact that the moulding material is loaded in a reservoir and is forced through orifices into the mould cavities by the application of heat and pressure. The heat and pressure must be maintained for a definite time in order that the chemical reaction (curing) may take place. The time, as in compression moulding, depends upon the cross section of the moulded piece and the type of moulding material.

Transfer moulds are more expensive than the compression type, and some sections of the moulded part may be weak, due to incomplete filling. Moreover, the flow may cause sectioning and internal stresses resulting in a weak or warped section. However, in many cases, the advantages of transfer moulding far outweigh its disadvantages.

Basically, there are two types of transfer moulds—the conventional sprue type and the positive plunger

type. The press is opened and the residue and sprue are removed from the key machined on the plunger.

In some factories, the sprue type transfer mould has been superseded by the positive plunger type transfer mould, except in rare cases. This has been done because the latter type of mould is less complicated, and therefore cheaper; is easier to maintain; requires less material; and results in lower part cost. With the positive plunger type mould, the material is loaded into a transfer cylinder and is forced directly through the gates by a plunger attached to the press ram. Thus, the transfer chamber and retainer required on the conventional sprue type transfer mould are eliminated.

Another advantage of the use of a plunger type transfer mould is that a smaller press can be employed. The clamping pressure for a transfer mould is quite high, varying with the material being moulded, but may be, say, 4 tons per sq. in. of projected mould area for an average condition. The total press tonnage must equal the projected area of the piece, the runners, and the loading chamber, multiplied by the clamping pressure, in tons per sq. in. When a sprue type transfer mould is used, the projected area of the sprue and of the additional gate lengths must be included in this calculation. In one instance, a press rated at 97 tons was sufficient with a plunger type mould, whereas a press rated at

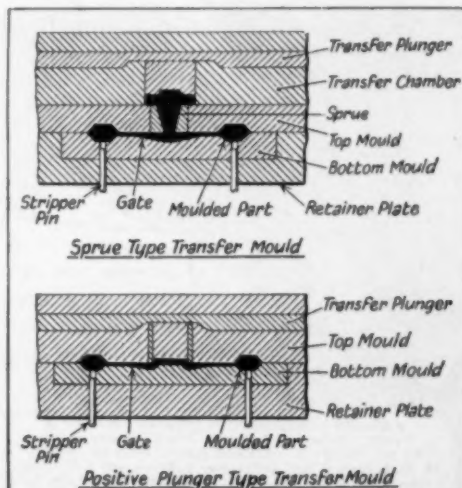


Fig. 4. Transfer moulds may be of either the sprue mould type or the plunger type. With the latter, mould costs and part costs are reduced, and the design of the mould is less complicated.

type, illustrated in Fig. 4. In the former, the loading chamber is connected to the gates by a sprue. The plunger acts directly on the material, forcing it through the sprue and gates and into the moulding cavities. When the part is cured,

116 tons was required for a sprue type mould.

DESIGN OF PLASTIC MOULDS.

The design of a plastic mould starts with the design of the part to be moulded, and the first step

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Still another group of materials may be employed for the moulding of parts with superior dielectric characteristics. These are usually mica-filled materials, and are quite

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weak mechanically. The average properties are: Specific gravity, 1.70 to 1.80; tensile strength, 4,800 lb. per sq. in.; flexural strength, 8,000 lb. per sq. in.; impact strength, 0.22 ft.-lb.; dielectric strength, 355 volts per mil; power factor at 10°, 0.01; water absorption, 0.09 per cent.; maximum heat resistance, 110 deg. C.; and shrinkage, 0.0022 in. per inch.

In addition to these more commonly employed plastics, a wide variety of materials is available specially blended to suit a particular purpose. Slate, silicon, soapstone, or clay may be selected as a filler material to improve the appearance or other characteristics. Mineral fillers may be specified to increase the life of the mould or the life of tools, such as cutters, saws, drills, or taps, when machining after moulding is required.

Materials having short-fibre fillers reduce the cost of moulded parts, while materials with long-fibre fillers, having greater impact resistance, make the parts more expensive. It is therefore uneconomical to select a material with better impact resistance than is required for the application.

The following step-by-step procedure will assist in selecting the most suitable material to be used for any particular application.

1. Analyse carefully the requirements of a new application and the conditions under which the part is to operate. Determine if mechanical strength, impact resistance, electrical properties, and heat resistance are of primary importance.

2. Use the data in the handbooks of the various plastic material manufacturers as a general guide. Compare the values of several materials in order to choose the one that comes closest to the requirements.

3. Estimate the working stresses to which the part will be subjected in service.

4. Determine the required minimum sizes of the cross-sections of the part to be designed, using the property values of the material that is selected. Calculate the strength of the cross-section, using a minimum safety factor of 4 for the mechanical properties and of 6 for the electrical properties. These safety factors must be increased by the designer, depending upon the importance of the moulded part in the functioning of an assembly, the

accuracy of the estimates of the working stresses involved, and the probable deterioration of the test values given, due to service conditions.

When the actual design of the part is undertaken, the moulding department and the tool design department should be called upon for advice. Designers who have not had much experience with plastic moulded parts are likely to specify tolerances which are closer than necessary; make the wrong selection of materials; design complicated sections instead of simplifying the part as much as possible; disregard the need for taper on the part; provide walls that are too thick or too thin for practical moulding; neglect to rib the part for strength or groove it for lightness; decrease the strength of a section by deep counterbores; fail to acquaint the mould designer with the function of the part and the method of assembling it; specify radii on the parting line; and overlook the need to provide radii to increase the strength in other sections.

It is imperative that the mould designer knows where the part is to be used, how it is to be assembled, and what its physical, electrical, and chemical properties must be. Only with a thorough knowledge of the application can he intelligently criticise the part design. In many cases it is possible to reduce the cost of a mould by allowing slightly greater tolerances or by modifying the part so that it can be moulded in a different position—a factor which may affect the type of mould specified.

If the component is to be produced in quantity and its design is to remain the same for a long period of time (perhaps three to five years), an expensive mould may be justified. All designs should be based on an anticipated monthly or bi-monthly production rate and on the types of presses—fully automatic, semi-automatic, or manually operated—which are available.

When all these factors have been evaluated, it is possible to make a preliminary estimate of tool cost and of cost per part. Most parts can be moulded in any one of several different ways, and it is therefore advantageous to determine the part cost for different types of moulds. At the plant with which the writer is connected, a mould designer and machine shop fore-

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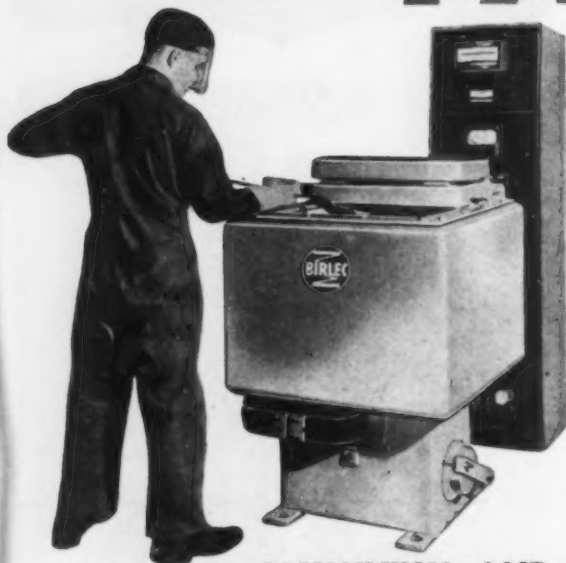
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man, in co-operation with a methods engineer, estimate the mould cost, using as a base the standard time-study data that has been accumulated from previous performance. The methods engineer and time-study men can predict the cost of manufacturing the part, and the materials engineer can foretell quite accurately the cost of plastic materials to be used in producing the piece. Only after several different methods have been compared is the design of the mould decided upon.

Close co-operation between the design and manufacturing departments and the customer continues until the mould is completed. Mould cost varies widely, and is dependent upon many different factors. A very simple type of mould may cost as little as £50, while a more complex type may cost as much as £2,000 to £2,500. It will thus be apparent that unless there is a close co-operation between all concerned, a heavy loss may be incurred by the tool department.

Simultaneous Jolt-Squeeze Machine

(Continued from page 28.)

the air inside the cylinder is exhausted.

Immediately the table gravitates towards the anvil, which is now moving upwards under the pressure of the jolt spring, and the contact between the anvil and the striking pad of the table produces the jolting action, which might aptly be described as a "clapping" action. As with a shock-jolt machine the sand is rammed down vertically.

Assuming that an ordinary shock jolting machine has a 2-in. stroke, the jolt piston of a simultaneous jolt-squeeze machine of similar capacity would lift the table 1-in. while the anvil would be depressed 1-in. It is thus possible for many more impacts to be given to the table per second, thereby reducing the operating time appreciably.

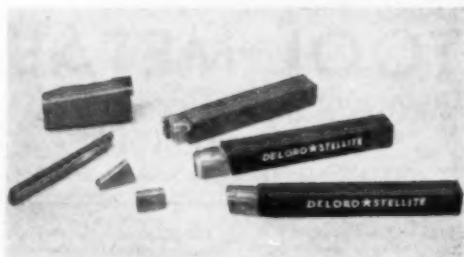
The shockless jolter principle has an important application, namely the continuance of the jolting action during the upward movement of the squeeze piston and also while the mould is actually being squeezed. It is suggested that this is an entirely novel feature of moulding machine design.

As stated previously, the jolting unit consists of a piston and anvil and is housed in the squeeze piston. When the squeeze pressure is applied the squeeze piston moves upward until it engages with the underside of the machine table and continues its upward journey, carrying the mould to the underside of the squeeze plate and slightly compressing the jolt spring.

The flask is now clamped between the pressure plate and the jolt table by means of the squeeze piston. Compressed air is once again forced into the jolt cylinder and works expansively, moving the anvil downwards and compressing the jolt spring, while the table remains

(Turn to page 50.)

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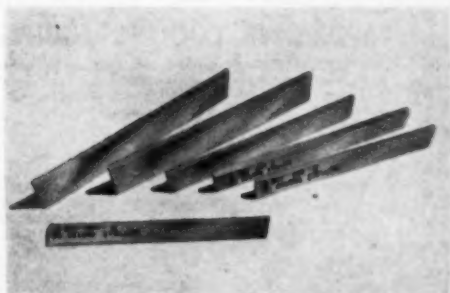
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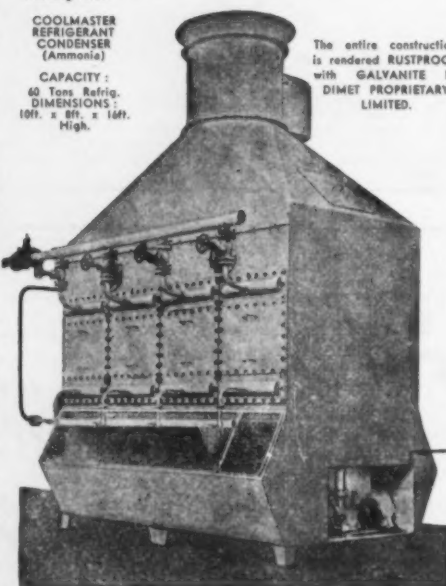
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(Continued from page 48.)
stationary. The anvil goes on moving downwards until the exhaust position is reached and is then thrown back against the underside of the machine table by the spring recoil.

APPLY JOLT AND SQUEEZE

Since the squeeze pressure is still being applied, jolting and squeezing are being applied simultaneously.

Apart from the saving in time this process has the further advantage that the sand is rammed laterally, which is essential when extremely accurate castings are required.

This method of simultaneous-jolt squeezing has been developed still further by the introduction of machines with two pressure heads, each of which swings over the centre of the machine table.

On the left-hand pressure plate is fitted a shaped pressure board which conforms to the shape of the pattern to be moulded. The flask is filled with sand and jolt-squeezed in the normal manner with the shaped pressure board in position, after which the squeeze cylinder is exhausted and the left-hand squeeze head is returned to the clear position. Additional sand is then placed in the flask and the right-hand swing head is brought over the machine table. Attached to the right-hand swing head is a normal flat pressure board, whereby the flat ramming is given when the mould is jolt squeezed for the second time.

The double operation is most effective since all the interstices of the pattern are filled with sand. This method undoubtedly produces castings to the finest dimensional limits.

These machines can also be fitted with an automatic device which enables the entire cycle of operations—filling the flask with sand, the movement of the swing head over the machine table, jolting, squeezing and pattern drawing—to take place in the minimum time without the constant supervision of an operator, the entire cycle being started simply by pressing a push-button switch.

An example of the use of a simultaneous jolt-squeeze moulding machine is given in Figs. 2, 3, 4 and 5.

Fig. 2 shows a simultaneous jolt-squeeze turnover draw machine operating on a flask approximately 4 ft. square. This machine can be used on both shallow and deep work. The operator is filling the flask with sand from an overhead hopper, the correct amount of sand being gauged by the use of a filler frame.

In Fig. 3 the machine is shown with the swing heads in position over the machine table while the simultaneous jolt-squeeze operation is being carried out. The squeeze lever is being operated by the left-hand and the jolt by the right-foot.

In Fig. 4 the machine has turned over and the pattern draw is commencing.

Removal of the finished mould from the machine is shown in Fig. 5. This operation is facilitated by use of concealed rollers attached to the pressure heads and also by a swing-down roller track which connects with a line of gravity roller track leading to the closing position.

It will be noted from the illustrations that the machine is operated entirely by a single man, the ancillary equipment being so designed that all heavy lifting is eliminated and physical actions are limited to operating the various levers.



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Electrolytic Polishing

Its Application to the Finishing of Specific Alloys and Articles

The limitations of electropolishing as a production process are described in this article, and recommendations are made concerning its application to the finishing of specific alloys and articles. The status of the process is discussed, and particularly its use in conjunction with mechanical polishing. The importance of the surface condition of the article before electropolishing is mentioned, and its influence on final brightness and reflectivity. The greatest possibilities of electropolishing may be in the processing of large numbers of small, intricately shaped articles which are difficult and costly to polish by mechanical means.

SO much has been written about the advantages of electropolishing that it is well to remember that, while electropolishing is now an established production method of polishing certain metals and alloys, experience has shown that it suffers from certain shortcomings and in only a few instances is it the complete alternative to mechanical polishing. This article describes how the process may be used advantageously, and presents facts which may be used as a basis for assessment of suitability of the process for finishing specific metals and articles.

Broadly, there are two ways of using electropolishing: (a) Alone, that is, without the aid of mechanical polishing, and (b) in conjunction with either "prior" or "subsequent" mechanical polishing.

Where electropolishing can be used alone to produce a satisfactory polish—and such cases are in the minority—a great saving in overall cost and a considerable increase in output of finished components are generally achieved. In some instances, the polish obtained is superior to that obtained by mechanical means. The widest application of electropolishing, however, is where it is combined with mechanical polishing; in these cases, also, substantial overall savings are made.

Electropolishing is useful to the electroplater either in polishing prior to plating, or in the polishing of the electrodeposited itself. The adhesion of an electrodeposited on an electropolished surface is usually of a very high order, although a special surface

activating treatment is sometimes required.

METALS FOR ELECTROPOLISHING.

The number of metals and alloys which can be electropolished satisfactorily at the present time is limited almost exclusively to single phase materials, of which the microstructures show complete homogeneity. The few exceptions, says C. E. Naylor, an officer of the Defence Research Laboratories, in "Plating Notes", consist substantially of one phase, the second phase being only a minor feature of the structure. The common metals and alloys amenable to electropolishing in approximate order of ease of polishing are: Group I, austenitic stainless steels; Group II, other stainless steels, pure aluminium, electrodeposited nickel, electrodeposited silver, nickel silver; Group III, copper, cartridge brass, plain carbon steels. The presence of a large proportion of a second phase, or even a third phase, almost without exception gives rise to differential metal removal over the entire surface, resulting in an uneven polish. Examples of alloys which are not suitable for electropolishing are: cast iron, zinc-base die-casting alloy, 60/40 brass, high lead content bronzes, bronzes and aluminium-silicon casting alloy.

PRIOR SURFACE CONDITION OF METAL.

The maximum degree of polish attainable in reasonable time, using any proven electropolishing process, will be largely dependent upon prior surface condition of

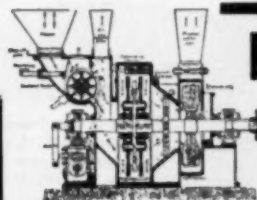
the metal. Sand castings, for example, in the absence of overall grinding or polishing, will exhibit excellent brightness, but poor plane-surface reflectivity or mirror properties, owing to the presence of inherent surface irregularities. On the other hand, finely ground surfaces, whether on castings, forgings or sheet and wire fabrications, will exhibit both brightness and plane-surface reflectivity. It must be borne in mind, however, that the degree of flatness produced by electropolishing industrial metals and alloys is only rarely as good as that produced by mechanical means. This is largely owing to a slight rippling effect resulting from incomplete homogeneity of these materials. Thus, to obtain the best possible finish by electropolishing, it is essential to use good quality metal which should be of small grain-size and be substantially free from non-metallic inclusions, seams, porosity and other defects. These defects are most undesirable, as electropolishing makes them more pro-

nounced. It may be necessary to obtain the co-operation of the supplier in obtaining suitable metals.

COMBINED MECHANICAL AND ELECTROLYTIC POLISHING.

Polishing by mechanical means is usually desirable before commencing electropolishing and, for most economical processing, this mechanical polishing should be restricted to the degree which will enable the required final finish to be obtained by electropolishing for not more than 20 minutes. It has been found, by experience, that the abrasive used in the final stage of mechanical polishing should generally be not coarser than grade 180. The most suitable procedure, however, for any particular component is best determined by trial and error.

The surface produced by electropolishing is usually brighter than that produced by mechanical polishing, but electropolished work is sometimes considered to lack sales appeal, and in these cases a final light buffing operation gives the article the desired hand-



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polished appearance. Mechanical polishing is also used to remove the light "bloom" (which sometimes occurs on electropolished metals), so that the true metallic sheen may be revealed. This procedure is often followed in the case of cutlery-type stainless steels.

SIGNIFICANCE OF SIZE, SHAPE AND NUMBER OF ARTICLES.

Other factors to be considered when contemplating the use of electropolishing are size and shape of the article and the number involved, the shape factor being of particular importance. Most articles of intricate shape are

very difficult to polish mechanically and it is here that electropolishing can be of special value. It may be necessary, however, to employ positioned cathodes to polish into the deepest recesses on some articles, but this cannot be considered to be a serious shortcoming of the process. Large flat

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surfaces are not particularly amenable to electropolishing owing to the effects of poor current distribution and to the enlargement of small surface imperfections. Poor current distribution, which causes lack of uniformity of polish, may also be substantially overcome by the use of specially shaped and located cathodes.

CLASSIFICATION OF ARTICLES FOR ELECTROPOLISHING.

Groups of articles are listed below in approximate order of their suitability:

Wire and thin rod products: Refrigerator shelves, film developing units, meat hooks, potato mashers, wire baskets, soap containers. (Often the only method of polishing this type of article. Useful in removing spot welding scale.)

Strip products: Wind screen wiper blades, watch bands, serviette rings, egg beater blades.

Small castings: Costume jewellery, building hardware, locks.

Stampings: Costume jewellery, hardware.

Machined parts: Optical rims; surgical nails, plates and screws.

Forgings: Surgical instruments, including all types of forceps, shackles. (Helps remove forging scale.)

Shallow pressings: Hub caps, tea strainers, trays, spoons, ladles, cigarette lighter parts, reflectors. (Suitable in absence of large flat surfaces. No need for special cathodes.)

Deep pressings: Hollow-ware of all types, e.g., basins, bowls, dishes, sinks. (Special cathodes may be necessary for polishing into recesses.)

The size of articles to be polished has a considerable bearing on the design and capacity of electropolishing equipment. Essentially, the equipment is similar to that used for chromium plating in that current densities up to 1,000 amp. per sq. ft. are necessary (but generally of the order 200 to 500 amp. per sq. ft.) and also in that lead-lined tanks can usually be used. It has been found that electropolishing of a large number of small components is generally more economical than the electropolishing of a few large components both from the standpoint of initial outlay of capital and of

(Turn to page 54.)

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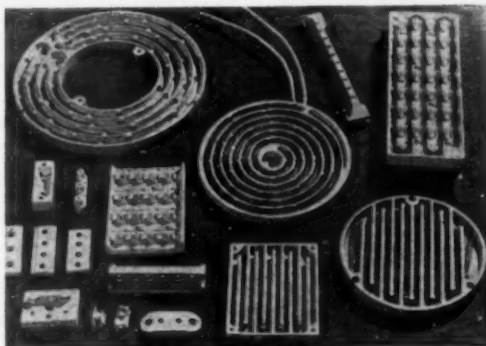
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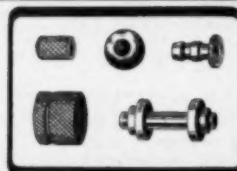
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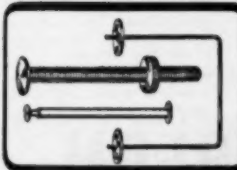
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(Continued from page 52.)

cost per unit area. While it does not always follow that the cost will be less than that of mechanical polishing, worthwhile economy may frequently be achieved by careful selection of articles for electropolishing. Another advantage of the process is that it can be operated by an unskilled workman after a short initial training period. Maintenance, however, should be the responsibility of someone with at least a basic knowledge of electro-chemistry.

Details of solution compositions have been included in papers published by Defence Research Laboratories. Comprehensive information from other sources covering the electropolishing of brass, stainless steel and other alloys is also available at D.R.L. Enquiries are welcomed, and should be addressed to: General Superintendent, Defence Research Laboratories, Private Bag No. 4, P.O., Ascot Vale, W.2. Experimental work on this process is being continued at D.R.L.

HOSTELS IN COUNTRY TOWNS.

STATEMENT BY SECONDARY INDUSTRIES MINISTER.

"One of the principal aims of the Secondary Industries Department is to increase the labour potential in country towns," the N.S.W. Minister for Secondary Industries (Mr. Dickson) said recently.

"There is now a regular stream of British and overseas manufacturers calling on us for advice and assistance in establishing Australian manufacturing units of their organisations. Wherever it is considered economically sound for such an industry we recommend an area outside the crowded metropolis.

"To further this policy of decentralisation of industry my Department is taking an active part in the selection by a representative Commonwealth-State Committee of suitable country towns for the erection of hostels to assist in the housing problem.

"The 1950 allocation of these migrants for country areas of N.S.W. is 1,600. This is based on groups of 50 workers with their wives and an average of two children a family for each of eight towns.

"On information furnished by the State Government in conjunction with the Commonwealth Employment Service, eight towns required for 1950 have been selected. They are Maitland, Taree-Wingham, Grafton, Gunnedah, Wagga Wagga, Albury, Lithgow and Cootamundra. Sites in these

towns are now being selected and it is hoped that by the use of Nissen Huts that erection of the hostels will be expedited.

"My Department, however, which is concentrating on the decentralisation of secondary industries has recommended that, in addition to the eight towns mentioned hostels should also be established in Cooma, Cessnock, Deniliquin, Armidale, Tumut and Bialow as the initial sites for expansion. Selection of other localities is under investigation.

"Muswellbrook is also being considered. An officer of my Department will be visiting there shortly to investigate the town's ability to absorb migrants into permanent employment.

"My personal view is that many more country towns would be able to provide permanent employment for British migrants on the present basis of groups of 50 workers and to assimilate them into the community.

"The labour potential in country towns can be increased in the first instance by the erection of houses, through group nomination for hostels.

"Many of the migrants will be building tradesmen and their advent into a country town must eventually result in an impetus to local homebuilding.

"We must take the long-range view. Many migrants temporarily in hostels will ultimately obtain their own homes and the hostels can then be used in rotation by new groups of migrants. As the towns increase in labour potential the many new industries seeking opportunities here can be directed to them."

ENGLISH ELECTRIC APPOINTMENT.

Mr. C. M. Cocks, of Australia, has been appointed general manager of the traction department of the English Electric Company, London, and has been made a member of the board of the English Electric Export and Trading Co. Ltd. It is interesting to record that Mr. Cocks, who is a Melbournean, received his early training with the Victorian Railways.

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Campbell & Parr—Engineers and Non-Ferrous Founders.

Churchill, Mrs. Olive M.—White-workers.

Crouch, J. T., and Sons—Instrument Makers.

Delalande, A. A. & W. J.—General and Repetition Engineering.

Donna Hats—Millinery Mfrs.

Ferntree Gully Tile Co. Pty. Ltd.—Cement Tile Mfrs.

Frankwll Eng. Industries—Mfg. Engineers.

"Globe Metal Spinning Works"—Metal Spinning.

Glovers Industries Pty. Ltd.—Glove Mfrs.

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PROTECTIVE CLAUSES IN TENDERS.

The Federal Council of Electrical and Telephone Manufacturers of Australia have issued a series of proposed Protective Clauses in Tenders.

They have now also issued an example of the method of working out prices variations under Clause 3 of these Protective Clauses.

Copies can be obtained from the Sectional Secretary, Electrical Section of the Chamber of Manufacturers.



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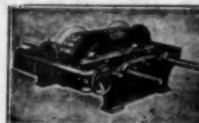
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LARGE ELECTRIC POTTERY KILN.

A large rotary hearth decorating kiln for china-ware has recently been installed by The General Electric Co. Ltd., in the works of the Salisbury China Co. Ltd., at Longton, Staffordshire, England.

The purpose of the furnace is to provide the relatively low temperatures (700 deg. - 800 deg. C.) to which the ware is subjected in order to fix any decorative colouring that has been applied.

The ware is carried on a refractory-faced rotating hearth which is supported beneath the kiln on rollers and is driven by a three-phase squirrel cage motor. Although the hearth is at present arranged to rotate once in 17 hours, other firing cycles can easily be obtained by means of variable-speed gears.

The rotary hearth principle was used for this kiln because it gives maximum productive capacity with the minimum floor area and at the same time permits a design that has high thermal efficiency with accurate temperature zoning.

The heating zone has three sections, each supplied by a separate, tapped transformer to allow individual voltage control. The heating elements are sub-divided into a number of units which can be switched in to give the precise heating curve required. Two of the sections are arranged for permanent connection to the supply, with ratings just sufficient to hold the temperature required, while the third has automatic temperature control and a rating above that required to hold the temperature. This arrangement ensures a good load factor.

The mean diameter of the kiln is 16 ft. 6 in., with an internal cross section of 20 in. x 26 in., and by using refractory supports for stacking the ware, unobstructed loading from the side can be achieved.

With a 17-hour firing cycle operating on a 168-hour working week, more than 27,000 pieces can be fired every week, allowing a loading density of 24 pieces per cu. ft. in the total enclosed capacity of 160 cu. ft.

An important feature of the design is the careful planning of

pre-heating and cooling zones. A fan at the end of the pre-heating section is arranged to exhaust to the atmosphere and draws air warmed by waste heat, past the cold ware and thereby gives a high degree of recuperation.

At the outgoing part of the kiln a centrifugal fan is used for rapid cooling. Air is circulated between the two casings of this section of the kiln and cools the ware sufficiently to enable it to be unloaded.

The total electrical loading of the kiln is 60 kW, from a three-phase supply and the automatic temperature control equipment will maintain temperatures up to 800 deg. C.

The G.E.C. is represented solely in Australia by The British General Electric Co. Pty. Ltd.

WROUGHT ALUMINIUM AND ALUMINIUM ALLOYS.

The Standards Association of Australia announces a proposal to endorse as Australian standard specifications the following British standards for wrought aluminium and aluminium alloys for general engineering purposes:

B.S. 1471-1949—Tubes; B.S. 1473-1949—Wire for Rivets; B.S. 1474-1949—Welding Wire; B.S. 1475-1949—Wire for General Purposes; B.S. 1476-1949—Bars, Rods and Sections.

In each case it is proposed to endorse the British standard without amendment for Australian conditions, but comment is specially desired from those using the material on the tolerances laid down in B.S. 1476, Table 2, Limits on Widths across Flats of Hexagonal Bars.

Copies of the British standards can be seen at the Standards Association of Australia Headquarters, Science House, Gloucester and Essex Streets, Sydney, or at branch offices at all capital cities of the Commonwealth, and Newcastle, N.S.W., to which addresses, also comments, should be sent before the closing date on 30th September, 1950.



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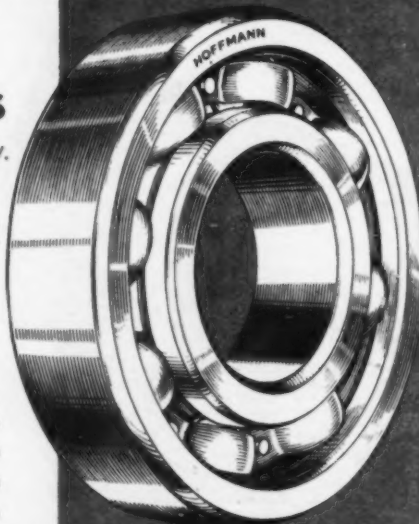
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On Our Bookshelf

"Dictionary of Business Terms (Spanish-English)"

To many industrial organisations throughout the Commonwealth the present time is one for a review of existing markets and preparation for the more keenly competitive period that lies ahead. To such, overseas markets are beginning to appear in a more favourable light.

A knowledge of business terms in the language of the country with which business is being done is of considerable importance, both in the avoidance of misunderstanding and in the expediting of orders and quotations.

Louis A. Robb's "Dictionary of Business Terms (English-Spanish and Spanish-English)" will be a valuable addition to the libraries of firms dealing with Latin American countries.

Already well known is this author's "Engineer's Dictionary" in those languages. In the preface to his new book, Mr. Robb, who is Vice-President of the Ambursen Engineering Corporation in the United States, points out that the material for his "Engineer's Dictionary" originally included several thousand words and phrases which were not, strictly speaking, terms of engineering but were useful to engineers, especially to those who work abroad. Eventually most of these terms were eliminated with a view to preserving the book's character as a dictionary of engineering. He thus had on hand a substantial collection of English and Spanish equivalents in the vocabulary of business, and these formed the nucleus of his "Dictionary of Business Terms."

"Dictionary of Business Terms (English-Spanish and Spanish-English)", by Louis A. Robb, is published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York 18, N.Y., U.S.A.

"Australian Mercantile Law"

Although Yorsten and Fortescue's Australian Mercantile Law is intended primarily for the use of students, it has been found that many merchants, traders and others engaged in commercial

transactions have welcomed the opportunity of having available a concise work on the law of commerce.

The 1950 edition (the sixth) of this work has just been published, and the authors have continued their policy of keeping the work up-to-date and clarifying, where necessary, the text by re-writing portions of the work.

It is a book which will be valued by all business men, for it provides a source of reference on day-to-day problems which arise. The authors give more than just a superficial review of the subjects, but at the same time do not claim to have covered all the diversified parts of the commercial law.

Being intended primarily for the use of students preparing for the commercial law examinations of the various Universities, Accountancy and Secretarial Institutes, and for other examinations, and to relieve them of the necessity of reading through highly technical material, "Australian Mercantile Law" avoids verbosity without sacrificing clarity, while providing informative and readable outlines of the law concerning contracts; principal and agent; sale of goods; negotiable instruments; partnership; insurance; bailments, common carriers and innkeepers; bills of sale, liens, pawn and mortgage; guarantees and suretyship; ships, shipping and sea carriage of goods, landlord and tenant; commercial arbitration and awards; receivers; trustees, executors and administrators; patents, trademarks and copyright; company law; and bankruptcy law.

"Australian Mercantile Law" a textbook compiled by R. Keith Yorsten and Edward E. Fortescue, is published by The Law Book Company of Australasia Pty. Ltd., whose offices are at 140 Phillip Street, Sydney; 425 Chancery Lane, Melbourne; and 21 Adelaide Street, Brisbane.

Engineers' Handbook

The 1950 edition of the "British Engineers' Association Classified Handbook of Members and Their Manufactures" has now been published. It is a stoutly bound volume embodying 655 pages of reading matter and advertisements. A comprehensive classified list of manufactures, which is distinctively printed on a different

(Turn to page 61.)



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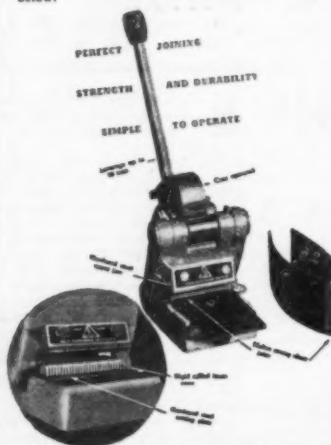
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(Continued from page 59.)

coloured paper, will be of great assistance to purchasers of engineering equipment.

The foreword deals with progress in the engineering industry and pays tribute to the work of the research organisations which serve the industry.

As has been the case for the past twenty years, copies of the Twenty-first Annual Edition of the Association's Handbook will be received gratis by selected buyers and agents in every country in the world which has business with the British engineering industry, the distribution being made to no less than 115 countries.

Copies are obtainable on application to the British Engineers' Association, 32 Victoria Street, London, S.W.1.

"The Wine Industry of
Australia"

Australian wine-lovers will find a lot to interest them in "The Wine Industry of Australia", by H. E. Laffer, who was Overseas Representative of the Australian Wine Board from 1930 to 1949.

His book has been published by the Australian Wine Board.

Discriminating wine-drinkers, who have long proclaimed the vir-

tues of Australian wine, will be gratified by the high assessment of quality an expert of such standing as Mr. Laffer places on Australian wines.

Mr. Laffer says: "With the exception of certain high-class vineyards, whose specific names are well-known, but then only in vintage years, Australian wines are, in general, sounder and better than those of the Continent."

The historical material shows how the industry's earliest foundations were laid by such famous pioneering families as the McArthur and the Blaxlands. It records interesting facts about the establishment of the vineyards in each of the principal wine producing states and reveals the notable part played by members of the medical profession.

Another chapter tells the story of the industry's great struggle to gain a foothold in the British market and its final triumph in the late 1930's when U.K. imports of Australian wines reached the yearly average of 3,500,000 gallons, and were second only to Portugal. This is amplified in tables in the Appendix and provides a sharp contrast with the sad position existing to-day when they have fallen to under 750,000 gallons a year due to the harsh treatment meted out by the British Government in the shape of prohibitive duties and the virtual elimination of Empire preference.

In the chapter on Home consumption, Mr. Laffer writes some caustic commentary on the absurdities of Australian Licensing Laws. The book is priced at 5/-.

Welding Research

We have received a copy of publication T.22, "Memorandum on Faults in Arc Welds in Mild and Low Alloy Steels". This was first published in "Welding Research", Volume 4, No. 1, February, 1950. Owing to the enormous demand

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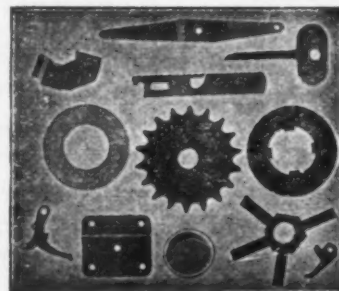
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for this memorandum it has been reprinted.

In this memorandum typical faults which can occur in arc welds in mild and low alloy structural steel construction are defined and illustrated; an outline is given of the reasons for their occurrence, and of the ways in which they may be avoided and corrected.

To assist engineers, inspectors and welding supervisors in making reference to a particular detail, each weld fault is dealt with under the following common sub-headings: Description; Cause and Prevention; Effect on Strength; Correction.

This memorandum contains 41 illustrations showing typical faults. Copies may be obtained from the British Welding Research Association, 29 Park Crescent, London, W.1. Price 2/6.

"Centreless Grinding"

"Centreless Grinding", Vol. 2, in limp cover, 114 pages, with 280 figures. This handbook or compendium, which is supplied free to engineers or technicians interested in the process of centreless grinding, is a continuation of the first Scrivener work upon the subject which appeared some four years ago. It is divided into four main sections: (1) dealing with recent modern developments, including wheel crushing, unusual applications, variations in the basic process, and so on; (2) descriptions of the latest types of machines; (3) details of some of the many methods of automatic operation which have been evolved during the past few years, and (4) examples of production obtainable, especially by the use of automatic equipment, every example being accompanied by a

photograph of the machine used, a dimensioned drawing of the piece, and another drawing showing the method of introduction between the wheels, in addition to complete technical data respecting stock removal, tolerance, and hourly production figures.—Our copy from the publishers, Arthur Scrivener, Limited, Tyburn Road, Birmingham, England.

INDUSTRIAL OUTPUT.

The disastrous effects of last year's general coal strike are reflected in production figures recently released by the Commonwealth Statistician, Dr. Wilson. They show, for example, that black coal production fell from 15,082,000 tons in 1948 to 14,928,000 tons in the year ended June 30th, 1949; output of blooms and billets of iron fell from 1,101,000 to 1,060,000 tons, while, on the other hand, production of pig iron rose from 1,045,000 to 1,084,000 tons, and ingot steel from 1,176,000 to 1,194,000 tons. Other decreases include: electric stoves, 41,900 to 33,300; gas stoves, 49,600 to 46,500; while production of men's and women's knitted outerwear dropped from 393,000 to 380,000 dozen.

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NEW STYLE OF ROOF FAVoured.

Factories would be cooler in summer and better lit if "saw-tooth" type roofs were replaced with the new "monitor" roofs. Mr. S. D. Lay, of the Labour and National Service Department, said in Adelaide recently.

Better lighting and ventilation, with more even temperatures, would make working conditions more comfortable and increase production, he said.

With Mr. J. McLeery, of the department in Victoria, Mr. Lay addressed members of the Illuminating Engineering Society on architectural control of sunlight in factories.

Explaining the "monitor" roof, Mr. Lay said it was like a small roof built several feet above the ordinary gabled roof of a factory.

The wall, extending from the lower to the upper roof, would be made of glass windows, which could be opened or closed.

A sawtooth roof admitted light and air from one direction only. Even when a breeze blew into sawtooth windows, back eddies were set up, and ventilation was poor.

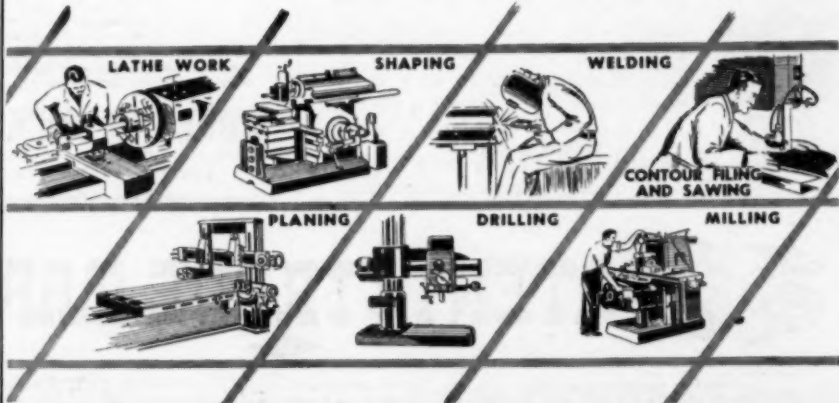
"With a monitor roof, you can open some windows and close others to control the flow of air," Mr. Lay said.

Buildings were now being designed to let in sunlight in winter and keep it out in summer, by using overhangs and baffles scientifically placed. Present blinds and screens impeded the entry of light and air.

INCENTIVES AT THE ROCLA PLANT.

In a profoundly interesting paper read by Mr. F. L. Fitzpatrick, general manager and a director of Rocla Ltd., Melbourne, at the recent monthly luncheon of the Federal Institute of Accountants, the story was told of the success of incentive systems at the Rocla works. "Much of the headway made," he said, "has been due to incentive systems throughout the entire organisation. Production has jumped, costs are being kept down, and employees are much better off. Most of the 'go slow' in industry is not deliberate. It is caused by the lack of any worthwhile target for good performance. My firm has proved that an intelligent stimulus pays. Productivity has increased and workers get their share of the benefit. In Rocla's case, the average bonus or incentive pay is 27 per cent. above normal wages. Everyone shares, from the top to the bottom. . . . Incentives should relate to direct production, not to profit, and management should stick to the standards it had set, not try to whittle them down if output jumped beyond expectations. Essence of the contract is for the gain to the worker—to ebb and flow with the effort put into the task." Undoubtedly there is much to be learned from the experiences at the Rocla plant.

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PATENT & TRADE MARK NEWS

Complete specifications lodged with the Patents Office are open to public inspection almost immediately after their lodgment. Interested persons are now able to obtain the details of an invention for which protection is being sought.

Provision is also made (Patents Act, 1948) for an applicant to obtain damages, if infringement occurs, from the date of publication of the application. A rule of practice has been established whereby an application will be examined more speedily when a prima facie case of alleged infringement is proved.

Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

PATENT SPECIFICATIONS ACCEPTED

PHOTOGRAPHICALLY COPY- ING DOCUMENTS.

138,050—Kodak (A.sia.) Pty. Ltd.

Claim 1. An apparatus for photographically copying a document and having a photographing station, an exposure station, means for supporting the document in said photographing station, a drive means for moving the document through said photographing station, a camera adapted to support the light sensitive material in said exposure station and having an objective for projecting a reduced image of the document onto said material, a second camera adapted to support a light sensitive material in

said exposure station and having an objective for projecting an image of the document of smaller reduction than said first camera onto said material, a hanger means for supporting either of said cameras in optical relation to said photographing station, an advancing means for said light sensitive material operatively connected to said drive means for normally moving said material at a synchronous rate with respect to the movement of the document and selectively at an increased synchronous rate with respect to the movement of the document, and a control means operatively connected to said advancing means and adapted to be actuated by said second camera when in position on said hanger means for selectively permitting said material to be moved at an increased synchronous rate with respect to the movement of the document.

Claim 4. An apparatus for photographically copying either one or both sides of a document and having a photographing station, an exposure station, means for supporting the document in said photographing station, a drive means for moving the document through said photographing station, reflecting means adjacent and on each side of said photographing station for receiving respectively the images of the obverse and reverse sides of the document in said photographing station and for directing said images into said exposure station, a camera adapted to support a light sensitive material in said exposure station and having an objective with an axis centrally of said material for projecting the images of both sides of the document onto said material, a second camera adapted to support a light sensitive material in said exposure station and having an

objective offset with respect to the centre of said material for projecting the image of only one side of the document onto said material, a hanger means for supporting either of said cameras in optical relation to said photographing station and reflecting means, an advancing means for said light sensitive material operatively connected to said drive means for normally moving said material at a synchronous rate with respect to the movement of the document, selector means associated with said advancing means for selectively moving said material at an increased synchronous rate with respect to the movement of the document, and a control means operatively connected to said selector means and adapted to be actuated by said

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second camera when in position on said hanger means for selectively permitting said material to be moved at an increased synchronous rate with respect to the movement of the document.

**EYELET AND TERMINAL
ASSEMBLY.**

137,667.—British United Shoe Machinery Company of Australia Pty. Ltd., Vic.

A head flange has on its face facing towards the barrel a plurality of narrow ribs projecting axially of the barrel and, at the other end, localities of weakening each in circumferential register with one of the ribs at which the barrel will split into prongs during setting of the eyelet.

A terminal assembly comprises an eye of wire with the eyelet clenched thereupon.

ROTARY IMPACT DRILL.

138,036.—Snyder Oil Tool Corp.

Claim 1. A rotary impact drill for earth boring which includes: a shank adapted to have a bit attached thereto and to be rotated in a hole having drilling fluid therein; impact means reciprocally mounted on said shank; drag means rotatably mounted on said shank and urged to rotate by said shank but adapted to resist said rotation while remaining rotatable with respect to the wall of said hole; and means responsive to relative rotation between said shank and said drag means for operating said impact means.

MOVABLE VALVE MECHANISM.

138,041.—W. R. Terry.

Claim 1. Valve mechanism comprising a movable valve member, an actuating member movable between spaced portions to impart corresponding movements to said valve member, means operable to lock said actuating member in one at least of said spaced positions and resilient means operable to urge said actuating member from said lastmentioned position to the opposite position thereof and constructed and arranged whereby when said resilient means undergoes a predetermined movement said locking means is released and said actuating member is moved with a snap action to said opposite position thereof.

**TRADE MARK
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94,623. "Truscon." Unwrought and partly wrought metal.—Truscon Steel Company, Youngstown, Ohio, U.S.A.

94,836. "Hotpoint." Electric refrigerators, washing machines, dish washers, and vacuum cleaners.—Australian General Electric Proprietary Limited, 93-95 Clarence Street, Sydney, N.S.W.

96,543. A design of the words "La Plant Choate." Bulldozers; trailbuilders; road-builders, etc.—La Plant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa, U.S.A.



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95,380. "Karbate." Centrifugal pumps and parts.—National Carbon Company, Inc., 30 East 42nd Street, N.Y., New York, U.S.A.

96,860. "Sewlite." Electric motors.—Harrison & Smith Pty. Ltd., 133 Flinders Lane, Melbourne, Victoria.

96,974. A label design of a bobbin with the words "Gyro Brand."—Textile bobbins.—Frank Paris Douglas, 1420 High Street, Malvern, Victoria.

94,835. "Hotpoint." Sound recording and reproducing apparatus.—Australian General Electric Proprietary Limited, 93-95 Clarence Street, Sydney, N.S.W.

96,992. "Viewola." Instruments for transmission of reception of sound.—Amalgamated Wireless (Australasia) Limited, 47 York Street, Sydney, N.S.W.

88,588. "Jolly Nigger." Money boxes of metal.—Thomas Mylecharane Young, 60 Catherine Street, Leichhardt, N.S.W.

94,944. "Aquafruf." Powder for waterproofing cement.—Winstone Limited, 69-77 Queen Street, Auckland, New Zealand.

TENDERS FOR PATENTS

"RIVET, METHOD OF RIVETING AND TOOL THEREFOR."

The proprietors of Commonwealth Patent No. 127,603, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"DELAYED ACTION TIME CONTROL FOR MECHANISMS"

The proprietors of Commonwealth Patent No. 123,075, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

"RIVET MANUFACTURE."

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"TAG-LINE DEVICE"

The proprietors of Commonwealth Patent No. 134,461, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from **GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys**, of 67 York Street, Sydney, N.S.W.

TENDERS FOR PATENTS

"IMPROVEMENTS IN AND RELATING TO MEANS FOR DETERMINING AND RECORDING THE STRESSES IN WIRE ROPES, CHAINS, AND THE LIKE."

The proprietors of Commonwealth Patent No. 124,205, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys, of 67 York Street, Sydney, N.S.W.

"SPRAYER TANKS AND THE LIKE."

The proprietors of Commonwealth Patent No. 133,953, are prepared to negotiate for the sale of their rights in the above, or for the granting of a licence to make, use and vend the invention within the Commonwealth of Australia. Particulars obtainable from GRIFFITH, HASSEL & GRIFFITH, Patent Attorneys, of 67 York Street, Sydney, N.S.W.

"IMPROVEMENTS IN OR RELATING TO FLUID CONTROL DEVICES", and "IMPROVEMENTS IN OR RELATING TO FLUID CONTROL MEANS."

Commonwealth Patents Nos. 121,568 and 124,785. The Patentees of these inventions desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to these ends from persons and firms interested.

Address inquiries to
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Patent Attorneys, 16-18 O'Connell Street, Sydney.

"IMPROVEMENTS IN MOTH-PROOFING SOLUTION."

Commonwealth Patent No. 107,804. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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"IMPROVEMENTS IN COLLAPSIBLE CONTAINERS, SUCH AS SUITCASES, ATTACHE CASES OR LIKE TRAVELLING CASES."

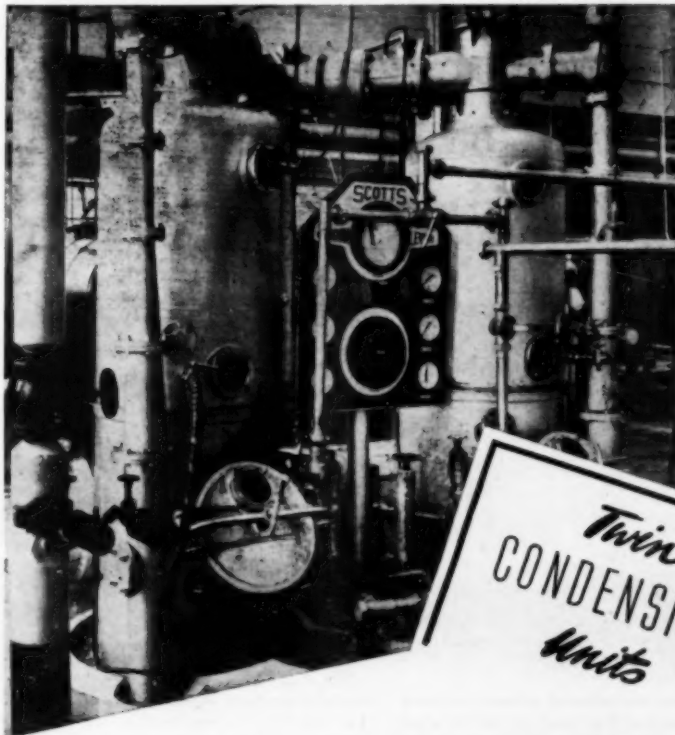
Commonwealth Patent No. 129,018. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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"IMPROVEMENTS IN STRUCTURAL MEMBERS."

Commonwealth Patent No. 121,608. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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86,910. "Bing & Grondahl." Porcelain, ceramics, earthenware, majolica, terra cotta, etc.—Aktionselskabet Bing & Grondahls Porcellaensfabrik (Porcelainfabrikerne Bing & Grondahl og Norden A/s), Vesterbrogade 149, Copenhagen, Denmark.

95,381. "Karbate." Carbon and graphite construction materials.—National Carbon Company, Inc., 30 East 42nd Street, N.Y., New York, U.S.A.

95,169. "Truscon." Engineering, architectural and building contri-

vances.—Truscon Steel Company, Youngstown, Ohio, U.S.A.

97,088. "Buteflame." Automatic water heaters.—Rheem Manufacturing Company, 570 Lexington Avenue, N.Y., New York, U.S.A.

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Further particulars may be obtained from

OSBORN F. CARTWRIGHT,
Patent Attorney, National Mutual
Building, 350 George Street,
Sydney, New South Wales.

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NOTICE is hereby given that the owner of Australian Letters Patent Nos. 124,495, dated 14th June, 1943; 120,370, dated 24th November, 1942; 125,306, dated 4th May, 1943; 124,151, dated 9th April, 1943; and 121,015, dated 8th February, 1943, is desirous of disposing of his rights in these inventions by way of licence or otherwise.

Further particulars will be supplied on application to

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NOTICE is hereby given that the owner of Australian Letters Patent No. 125,141, dated the 2nd September, 1943, is desirous of disposing of his rights in this invention by way of licence or otherwise.

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NOTICE is hereby given that the owners of Australian Letters Patent No. 118,183, dated the 22nd December, 1941, are desirous of disposing of the rights in this invention by way of licence or otherwise.

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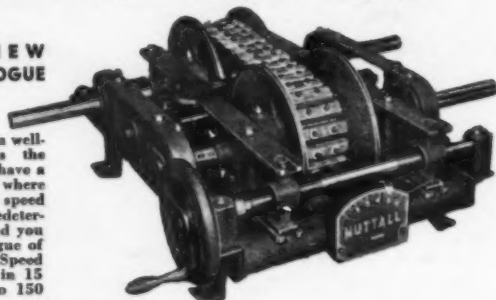
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Tyres (C/4/321/55). Izod Motors, £507/2/10.

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(Turn to page 72.)



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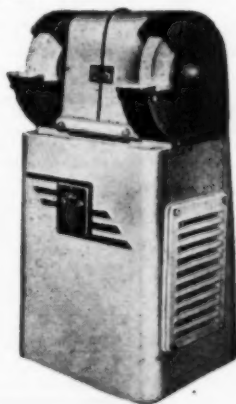
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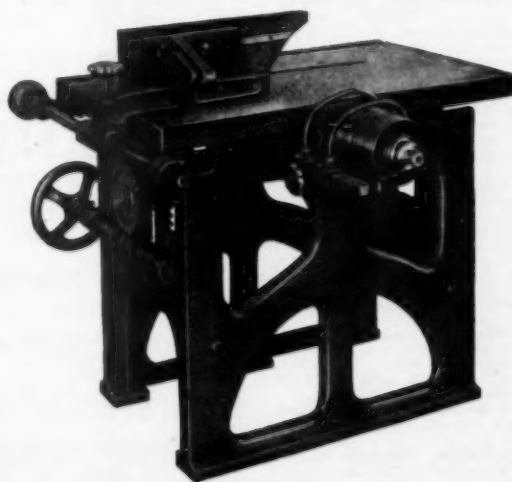
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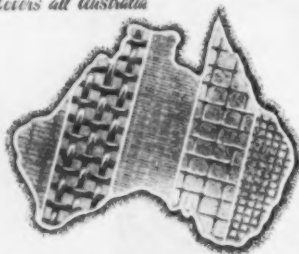
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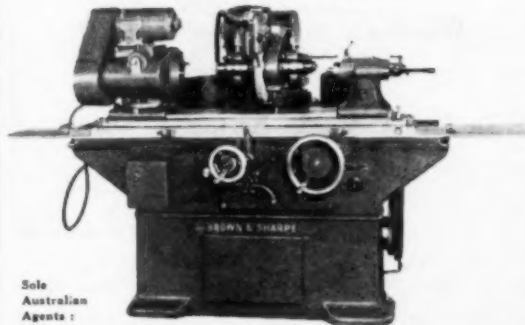
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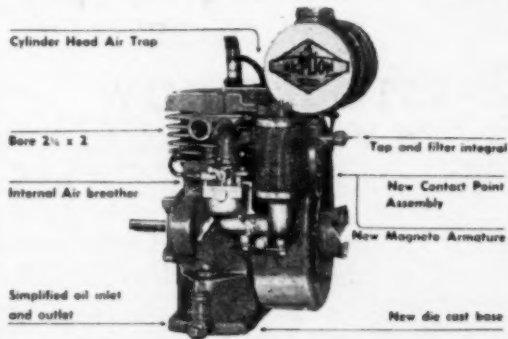


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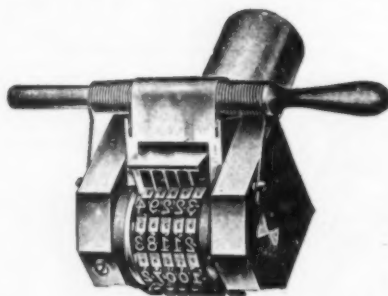
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Transformers. Lawrence & Hansen Electrical Pty. Ltd., £55/12/-.

Iron Dishes. E. A. Harper & Sons Pty. Ltd., £64/5/-.

Canvas Duck. S. Walder Pty. Ltd. (part), £54/6/2; E. H. Brett & Sons Pty. Ltd. (part), £90.

Ohmmeters. Guthridge Pty. Ltd., £146/17/6.

Ready Mixed Concrete. Ready Mixed Concrete (N.S.W.) Pty. Ltd., £8,065/3/4.

Petrol Pump and Tank. Gilbert & Barker Manufacturing Co. (Aust.) Pty. Ltd., £152/5/6.

Tungsten Carbide Tipped Bits. Commonwealth Steel Co. Ltd., £4,417/17/6; G.B.S. Hard Metals Co., £239/15/-; S.K.F. Bearing Co. (Aust.) Ltd., £237/16/-.

Flexible Metallic Tubing and Hose Unions. Scruttons Pty. Ltd., £95/5/2.

Bar Mat. A.R.C. Engineering Co. Pty. Ltd., £2,245/6/-.

Electric Floor Polishing Machine. H. Rowe & Co. Pty. Ltd., £18/1/10.

Sieves. H. B. Selby & Co. Pty. Ltd., £11/5/5.

Concrete Pipes. Rocla Pipes Ltd., £28/13/4, £48/18/-; Monier Pipe Co. Pty. Ltd., £357/7/6.

Spanners, Dies and Vice. Goodall & Co. Pty. Ltd., £9; Demco Machinery Co. Pty. Ltd., £1/5/10.

SYDNEY COUNTY COUNCIL.

Motor Omnibus, const. on Ford 194 in. wheelbase standard omnibus chassis, £985. Hastings Deering Service Ltd.

Varnished Cambrie Insulated Cables, item 1, £7,498. Gilbert Lodge & Co. Ltd.; item 2, £3,172. Sterling Cable Co. Ltd.

Circuit Breakers, indoor, cubic, 11,000 V., 150 MVA, £5,931. Standard Waygood Ltd.

Direct Current Switchboard, 240 V., £1,085. F. T. S. O'Donnell Griffin & Co. Pty. Ltd.

Transformers, 13,500 kVA, eight, £161,433. Wilson Electric Transformer Co. Pty. Ltd.

Structural Steel, £7,751. Harco Steel Fabrications.

Metal Clad Switchgear, 33,000 V., £53,315. Ace-Elec. Pty. Ltd.

Switching Equipments, 11,000 V., 300, £164,223. A. Reyrolle & Co. Ltd.

Differential Water Level Control Equipment, for Decarators, £2,985. Bailey Meters & Controls Ltd.

Switchgear, 440 V., £5,493. Wilson Electric Transformer Co. Pty. Ltd.

Cable, insulated, lead covered, high and low voltage, £25,821. Sterling Cable Company Ltd.; £16,398. AceElec. Pty. Ltd.

Replacement of heat insulation to the casing doors of boilers, £3,992. J. R. Pillars Pty. Ltd.

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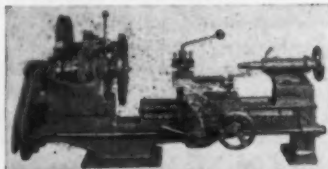
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PUBLIC WORKS DEPARTMENT.

Laundry and Dry Cleaning Machine, £4,920. Robert Bryce & Co. Pty. Ltd.

H.W. Services, Steam, £490. W. J. Hooking.

Refrigeration Plant, £450. Gordon Bros. Pty. Ltd.

Service Reservoir, r.c., 500,000 gals., £9,164. E. H. Bishop.

Refrigerating Plant, £490. Stuart Walker & Co. Pty. Ltd.

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Automatic pH recorders, four, £1,332. Jacoby Mitchell & Co. Pty. Ltd.

Pumps, "Mono" 1½ in., 20, with B.S.A. engine, £182 ea. A Snashall Pty. Ltd.

Air compressors, portable, 20, £2,062. McPhersons Ltd.

Pumps, elec. driven, two, £2,096. Thompsons (Castlemaine) Ltd.

Pumping unit, elec. driven, £490. McKinlay, Fletcher Pty. Ltd.

Mild steel, elec. welded, cement lined and coated pipe fittings, £6,830. Morts Engineering Co.

VICTORIA

PUBLIC WORKS DEPARTMENT.

Fittings, for Prefabricated Unit, A. F. Angus, £1,945.

Heaters, for Drouin, J. D. Johns, £47/10/-.

Equipment, for Preston Technical School, Triplett & Prentice, £1,038/3/-.

Equipment, for Footscray Technical School, H. W. Creek & Sons, £425.

Equipment, for Public Works Dept. C. Herlihy, £411.

Fly Wire Window Screens, J. H. Brown & Son Pty. Ltd., £69/10/-.

Heating Stoves, J. H. Brown & Son Pty. Ltd., £167.

Washing Machine, Girls' Hostel, Levin & Co. Ltd., £130/16/2.

Heating Equipment, etc., Nurses' Dining Room, Heatherton Sanatorium, Encon & Co., £312.

Water Heating Unit, Aquarium, Fisheries and Game Dept. Orm Smith & Co., £37/13/-.

Equipment, etc., Agricultural College, A. X. Refrigeration Installation & Maintenance Pty. Ltd., £335.

Temperature Controller, Mental Hospital, Ross, Robbins Pty. Ltd., £25/13/-.

Main Switchboard, Emily McPherson College of Domestic Economy, Russell Street, Fleet-Forge Pty. Ltd., £509.

Refrigeration Equipment, Aborigines Station, Kelvinator (Australia) Ltd., £423/12/3.

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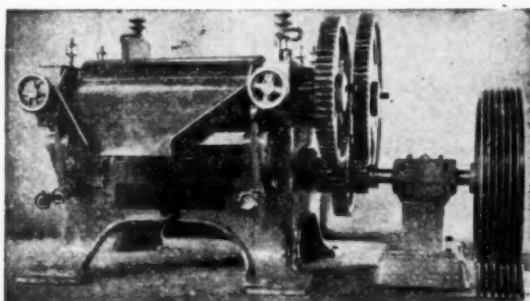
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DURBAN, EAST LONDON, LEOPOLDVILLE, BATAVIA.

NEW TENDERS - Contd.

Water Filtration and Softening Plant, for Carcoar District Hospital. Oct. 9.

SYDNEY COUNTY COUNCIL.
Elements (24), for sootblowers. Sept. 13.

Fork Lift Loaders and Stackers (Spec. 1447). Sept. 21.

Glass Symmetrical Holophane Refractors, for street lighting units (100). Sept. 18.

Insulating Oil, for elect. purposes (Spec. 1458). Sept. 28.

Solenoid Operating Mechanisms, for oil circuit breakers (Spec. 1452). Oct. 26.

Storage Batteries and Battery Charging Equipment, for Substations (Spec. 1446). Oct. 26.

DEPARTMENT OF PUBLIC WORKS.
Beastalk Hydraulic Platform. Sept. 15.

Belt-Ash Conveyor. Sept. 15.
C.I. Rainwater Bends. Sept. 15.
De-watering Pump. Sept. 15.
Light Winch. Sept. 15.
Registering Clock. Sept. 15.
Stocks and Dies. Sept. 15.
X-Ray Equipment. Sept. 15.
X-Ray Plant. Sept. 15.

GOVERNMENT RAILWAYS DEPARTMENT.
Compression Ignition Oil Engines (10), high speed, multi cylin-

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der, 500 B.H.P., vertical or vee type (Spec. 2205). Sept. 27.
Diesel Excavators (1 cu. yd.). (Quot. CE-2188). Sept. 11.
Disconnecting Switches (Quot. CE-1299). Nov. 23.
Electric Overhead Travelling Crane (75 ton), (Spec. 504). Extended to Nov. 1.
Welded Steel Turntable Girders (2), and Fittings. Sept. 20.

DEPARTMENT OF MAIN ROADS.
Augers. Sept. 12.
Battery Charger. Sept. 12.
Crab Winches, 10 cwt. Sept. 14.
Hook Bolts and Straining Bars. Sept. 14.
Hydraulic Jack, 5 ton. Sept. 12.
Hydraulic Jack, 20 ton. Sept. 12.
Lathe Chucks. Sept. 14.
Milling Cutters, Slitting Saws. Sept. 14.
Sheet Steel Tool Boxes. Sept. 14.
Tungsten Carbide Bits. Sept. 14.

STATE CONTRACTS CONTROL BOARD.

Clothing. Sept. 12.
Filing Trays. Sept. 14.
Index Cabinets. Sept. 12.
Library Steel Shelving. Sept. 12.
Linen. Sept. 12.
Steel Shelving. Sept. 12.

(Turn to page 80.)

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DOUBLE DRILL GRINDER ATTACHMENT

GRINDING WHEEL GRINDER

GENERATOR 300W—12V 400W—22V Type 05224

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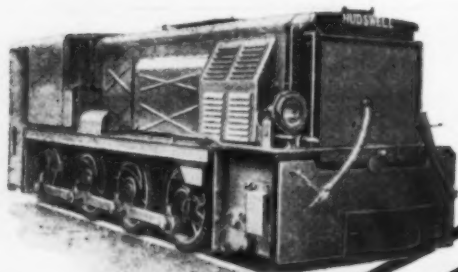
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Above: H8/S Scraper Chain Conveyor on installation of 1 in 9 in 4 ft. 6 in. seam.
Left: PA Scraper Chain Conveyor.

NEW TENDERS - Contd.

FORESTRY COMMISSION.

- Electric Valve Refacers. Sept. 12.
- Jeep Parts. Sept. 12.
- Shovel Handles, unsanded. Sept. 12.
- Steel Matting. Sept. 12.
- Trouble Lamps, auto. Sept. 12.

SYDNEY COUNTY COUNCIL.

- Insulating Oil, for Electrical Purposes (Spec. 1458). Sept. 28.
- Motor - driven Front End Loader, for Pymont "A" Power Station (Spec. 1459). Sept. 21.

MISCELLANEOUS.

- Medium Grader, Diesel Powered, and Excavator, suit Water and Sewerage Trenching, for Municipality of Kempsey. Sept. 18.
- Metalclad Switchgear, 11,000 volt, for Newcastle City Council. Extended to Oct. 9.
- Oil Circuit Breakers (8), 500 MVA, 33 KV, for Greater Wollongong City Council. Extended to Oct. 24.
- Outdoor Oil Circuit Breakers (11), 25,000 volt, for Newcastle City Council. Oct. 30.
- Power Graders (2), approx. 40 h.p., and 13,000 lb. weight, for Conargo Shire Council. Sept. 20.
- Radio Communication System,

two-way, for City of Goulburn. Sept. 28.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Aluminum Brass Tubes, solid drawn. Sept. 20.

CITY OF MELBOURNE.

Front End Loader, petrol driven. Sept. 19.
M.S. Pipework and Supports, for Fuel Oil Storage System (Spec. 734/E). Oct. 2.

Street Lighting Lanterns (Spec. 735/E). Dec. 4.

COUNTRY ROADS BOARD.

- Power-driven Winches (5), double drum, for lifting 2 ton drop hammer. Sept. 25.
- Power-driven Winches (3), single drum, for lifting 2 ton drop hammer. Sept. 25.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Arc Welding Sets (4) A.C. Transformer. Sept. 12.

(Turn to page 81.)

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NEW TENDERS — Contd.

Arc Welding Sets (7) D.C., portable electric, motor driven. Sept. 12.

M.S. Round Rods (1,010 tons). Sept. 12.

DEPARTMENT OF WORKS AND HOUSING.

Electric Passenger Lift, for South Yarra. Sept. 18.

Hot Water Supply System, for Canberra. Sept. 28.

Oil Burning Installation, for Parkville. Extended to Sept. 19.

Steelwork and Brasswork, for Cable Support, for Melbourne. Oct. 10.

Structural Steelwork, for various P.M.G. Line Yards. Sept. 12.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Centrifugal Pump, electric, motor-driven. Sept. 12.

Portable Concrete Mixers (5), 51 cu. ft. Sept. 12.

Power Operated Pipe and Bolt Screwing Machine. Sept. 12.

STATE ELECTRICITY COM- MISSION

Attachments, for Tractors (Spec. 50-51/91). Sept. 27.

Flanged Steel Pipes and Fittings (Spec. 50-51/64). Oct. 18.

Fork Lift Trucks (Spec. 50-51/88). Sept. 27.

Transformers and Spares, 6,000 KVA (Spec. 50-51/85). Sept. 27.

DEPARTMENT OF PUBLIC WORKS.

Central Heating System, for Collingwood. Sept. 26.

Hot Water Service, for Burnley. Sept. 12.

Hot Water Service, for Mordialloc. Sept. 12.

Kerosene Hot Water Service, for Nar-nar-goon. Sept. 12.

Kerosene Hot Water Service, for Nathalia. Sept. 12.

Kerosene Hot Water Service, for Beechworth. Sept. 19.

Kerosene Hot Water Service, for Euroa. Sept. 19.

Kerosene Hot Water Service, for Moynah. Sept. 19.

Kerosene Hot Water Service, for Welshpool. Sept. 19.

MISCELLANEOUS.

Annual Contracts: Petrol;

Lubricating Oils, for power

rollers; Cement; R.C. Box Cul-

verts; R.C. Pipes, for City of

Geelong. Sept. 15.

Annual Supplies:—Motor Spirit;

Lubricating Oils, Commercial Oils

and Greases; Kerosene, lighting

and power distillate, Fuel oil;

Portland Cement, for City of

Brunswick. Sept. 18.

C.I. Asbestos Cement or R.C.

Pipes, C.I. Pipe Specials and

Valves, for Elmore Waterworks

Trust. Sept. 20.

Front End Loader, mounted on

rubber-tyred tractor, for Shire of

Echuca. Sept. 11.

Front End Loader, for City of

Camberwell. Sept. 11.

Heavy Diesel Power Grader, for

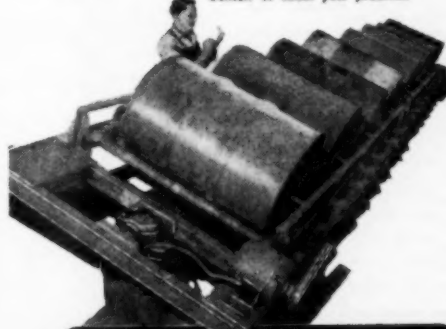
Shire of Charlton. Sept. 22.

(Turn to page 82.)



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NEW TENDERS — Contd.

Materials—Lubricating Oil, Fuel Oil, Grease and Power Kerosene; Cement; R.C. Box Culverts; Plain and R.C. Pipes, for City of Mordialloc. Sept. 11.

Pneumatic-tyred Tractor, approx. 20-25 h.p., for City of Mordialloc. Sept. 11.

Water Filtration and Chlorination Plant and Vacuum Cleaning Apparatus, for Shire of Rutherglen. Oct. 4.

QUEENSLAND

STATE ELECTRICITY COMMISSION.

Air Break Switches and Earth Leakage Protection Equipment (Spec. 233). Oct. 25.

Distribution Materials (Spec. 245). Nov. 1.

Hard Drawn Bare Copper Cable (Spec. 243). Oct. 25.

Insulators and Insulator Ironwork (Spec. 244). Oct. 25.

Switchgear: (132, 66, 22, 11 & 5 KV), Relays and Carrier Current Communication Equipment (Spec. T.F./3). Dec. 13.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Caravan, for Main Roads Dept. Sept. 14.

Electrical Equipment. Sept. 14.

Electricity Meters, for Govt. Elect. Dept. Sept. 14.

Forging Machine, for Railways. Nov. 16.

Lathe, Grinders, Welders, Drills, Air Compressors, for Railways Dept. Oct. 12.

S.H. Windmill, Purchase of. Sept. 14.

Steel Sections, for Railways. Nov. 16.

Transformer (50 KVA), for Norseman. Sept. 28.

TASMANIA

MISCELLANEOUS.

Materials:—C.I. or Asbestos Cement Pressure Pipes; Valves; C.I. Pipe Specials; Pumping Plant, for Municipality of Kentish. Oct. 9.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Bells and Buzzers (Sch. C-6352). Sept. 21.

Bimotional Switch Armatures and Associated Parts (Sch. C-6356). Sept. 21.

Bimotional Switch Parts (Sch. C-6344). Sept. 14.

Braided Switchboard Cable (Sch. C-6355). Oct. 12.

Carbon Electrodes and Granules (Sch. C-6387). Sept. 14.

Cardboard Cartons (Sch. C-6386). Sept. 14.

Compressed Gas Equipment (Sch. C-6405). Sept. 21.

Communication System between Sydney and Melbourne (Spec. C-8157). Extended to Jan. 18, 1951.

Cords, Switchboard Types (Sch. C-6372). Oct. 12.

Dial Parts (Sch. C-6338). Oct. 12.

Distributing Frames and Terminal Equipment (Sch. C-6378). Oct. 19.

First Aid Outfits and Containers (Sch. C-6396). Sept. 14.

Galvanised Iron Sheets (Sch. C-6383). Oct. 5.

Induction Coils (Sch. C-6391). Nov. 2.

Intercommunication Telephones (Sch. C-6384). Nov. 2.

Jacks and Number Plates (Sch. C-6359). Oct. 19.

Lubricating Oil, for N.B.S. (Sch. C-6399). Sept. 14.

Maintenance Parts, for Telephone Equipment (Sch. C-6314). Oct. 5.

Mechanics Tools, Gauges, etc. (Sch. C-6411). Nov. 23.

Motor Vehicle Batteries (Sch. C-6403). Sept. 21.

Outside Broadcasting Amplifiers and Associated Equipment (Sch. C-6400). Sept. 21.

Parts for Transmitter Insets (Sch. C-6388). Sept. 14.

Pipes, G.I. & B.I. (Sch. C-6393). Sept. 26.

Plugs (Sch. C-6363). Oct. 19.

Pole and Line Fittings (Sch. C-6401). Sept. 14.

Pole Trailers, 3-4 ton capacity (Sch. C-6367). Sept. 14.

Printed Forms, Telephone Account Series (Sch. C-6410). Sept. 14.

(Turn to page 81.)



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CURRENT TENDERS — contd.

Printed Forms, Telephone Order Forms in rolls and pads (Sch. C. 6412). Sept. 21.

Printed Forms, Miscellaneous Series (Sch. C.6413). Sept. 21.

Radio Broadcasting Transmitters (Sch. C.6389). Sept. 14.

Rectifiers, Telegraph No. 1 (Sch. C.6408). Sept. 21.

Rippers (Sch. C.6394). Sept. 14.

Semi Automatic Trunk Exchange Equipment, for Sydney Trunk Exchange (Sch. C.6025). Extended to Sept. 26.

Switchboard Keys (Sch. C.6404). Nov. 16.

Synthetic Enamels and Paints (Sch. C.6402). Sept. 14.

Telephone Meters (Sch. C.6390). Nov. 9.

Transformers (Sch. C.6398). Nov. 16.

Transmitting Tubes (Sch. C. 6353). Sept. 26.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Mild Steel Plates and Sections, approx. 1,600 tons. Sept. 25.

Road Transport Weighbridge (Spec. M.19). Oct. 9.

Reinforcing Steel (965 tons). Sept. 11.

Worm Reducing Drive (Spec. CH.7). Oct. 2.

DEPARTMENT OF CIVIL AVIATION.

Voice Frequency Telegraph Equipment (Sch. 303). Sept. 19.

DEPARTMENT OF WORKS AND HOUSING.

Dust Blower and Extractor. Sept. 12.

Galv. Steel Sheets, various sizes and gauges, approx. 800 tons (Item 26). Aug. 22.

Heating and Hot Water System, for University. Sept. 26.

High Tension Underground Cable Joint Boxes. Sept. 19.

Low Tension Underground Cable and Cable Joint Boxes. Sept. 19.

Metal Beds (474). Sept. 12.

Metal Chairs (474). Sept. 12.

R.C. Wash Troughs (300), two compartments. Sept. 12.

Transformers (12), 250 KVA and (2) 750 KVA. Sept. 19.

Truck Switchboard (11 KV), five panel. Sept. 19.

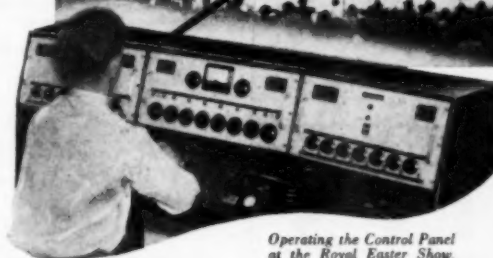
Ventilation and Air Conditioning Plant for Hamilton. Sept. 12.

Ventilation System, complete, for Captain Cook Dock. Sept. 12.

(Turn to page 84.)



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CURRENT TENDERS—contd.

GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Powered Rail Cars, 4 ft.
8½ in. gauge. Oct. 3.
Steel Sleepers. Sept. 12.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Air Purifying Crystals (Quot.
CE-6038). Sept. 11.

Automatic Milling Machine
(Quot. CE-1271). Sept. 28.

Centre Lathe, 20 inch, sliding,
surfacing and screwcutting gap,
bed type (Quot. CE-1109). Sept.
11.

Centre Lathe, 6 inch, medium
duty (Quot. CE-1124). Sept. 28.

Centre Lathe, 8½ inch, heavy
duty (Quot. CE-1123). Sept. 28.

Coil Winding Machine, for
layer winding of elect. coils
(Quot. CE-1130). Sept. 28.

Cylindrical Grinding Machine,
10 inch (Quot. CE-1110). Sept. 11.

Drilling Machine, Pillar type, to
drill 1½ ins. (Quot. CE-1126). Sept.
28.

Engraving Machine (Quot. CE-
1131). Sept. 28.

Finishing Machine, 4 inch, hori-
zontal (Quot. CE-1272). Sept. 26.

Motorised Band Sawing Machine
(18 inch), (Quot. CE-1129). Sept.
28.

Motorised high speed Sensitive
Drill, ½ inch capacity (Quot. CE-
1127). Sept. 28.

Polishing Head, motorised,
double ended (Quot. CE-1273).
Sept. 26.

Power Hacksawing Machines
(Quot. CE-1128). Sept. 28.

Sensitive Radial Drilling Ma-
chine, spindle radius 36 inch
(Quot. CE-1125). Sept. 28.

Tool Post Grinder (Quot. CE-
1274). Sept. 26.

Turntable Girders and Fittings
(2), Welded Steel. Sept. 20.

Wood Boring Machine, motor
driven (Quot. CE-1311). Sept. 27.

DEPARTMENT OF MAIN ROADS.

Felt, for Ships. Sept. 5.
Galvanised Iron. Sept. 5.
R.C. Pipes. Sept. 8.

DEPARTMENT OF PUBLIC WORKS.

Belt—Dry Ash Conveyor. Sept.
13.

Booster Pumping Plant, elect.
driven, for Muswellbrook. Oct. 9.

Boxes—Letter. Sept. 13.

Charger—Battery. Sept. 13.

Chokes—Filter. Sept. 13.

Derrick Cranes, elect. driven,
stiff leg (40 ton), for Clarence
River Works. Oct. 18.

Dredge Service Plant, Purchase
of, from Newcastle. Sept. 11.

Deep Well Pumping Plant,
Elec. Driven (82-49/50), for Gun-
nedah Water Supply. Sept. 18.

Elec. Driven Overhead Travel-
ling Cranes and Gantry, for Clar-

(Turn to page 86.)

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CURRENT TENDERS - contd.

ence River Works (Con. 70-49/50).
Sept. 13.

Globes, for Road Lamps. Sept.
13.

Leather Sleeves, for Sand Pump
Dredges. Sept. 11.

Pipe Strainers—Gunmetal. Sept.
13.

Power Transformers (2), 30,000
KVA, for Southern Electricity
Supply. Sept. 11.

Sewerage Pumping Plant, elect.
driven, for Murwillumbah. Sept.
25.

Sink and Drainers, S.S. Sept.
13.

Torch—Gouging and Tips. Sept.
13.

Transformers. Sept. 13.

Transformers, 250 K.V.A. Ex-
tended to Sept. 20.

Water Softener. Sept. 20.

DEPARTMENT OF WORKS AND
HOUSING.

Steel Tables (40), for Roselle.
Sept. 19.

MARITIME SERVICES BOARD.

Fluorescent Lighting Fittings.
Oct. 9.

Metal Cutting Band Saw. Oct.
3.

METROPOLITAN WATER,
SEWERAGE AND
DRAINAGE BOARD.

Diamond Drills (4), hydraulic
feed type, and Drilling Equipment
(P.T.384). Oct. 10.

Fluorescent Light Fittings (Con.
2417). Sept. 19.

SYDNEY COUNTY COUNCIL.

Aluminium Brass Condenser
Tubes and Ferrule Tubing, for
Bunnerong "A" Power Station
(Spec. 1454). Sept. 14.

Insulators and Fittings, for
Outdoor Service (Spec. 1455). Oct.
12.

Oil Immersed Fuse Switches,
11,000 volt. (Spec. 1421). Sept.
23.

Power Transformers (45 MVA),
for Homebush Sub-station (Spec.
1419). Extended to Sept. 28.

Single Core Cable, 33,000 volt.
(Spec. 1451). Sept. 21.

Turbine Blading, for Bunnerong
Power Station (Spec. 1448). Sept.
14.

Turbine Blading for Bunnerong
Power Station (Spec. 1455). Sept.
21.

NEWCASTLE CITY COUNCIL.

Metalclad Switchgear, 11,000
volt. Sept. 11.

MISCELLANEOUS.

Air Compressors (2), and Elec-
tric Motors, Purchase of, from Al-
bury City Council. Undated.

Carbonizing Plant, for City of
Armidale. Sept. 30.

Carbonizing Plant, consisting of
vertical retorts, for Bathurst City
Council. Oct. 31.


Galvanised Steel Cable (15 tons
of 7/16 inch), for Central West
County Council. Sept. 11.

Pipes (4 and 6 inch), for Trunk
Mains; Pipes, 4 and 6 inch, for
Reticulation Mains; Valves and
Fittings, for Reticulation Pipes,
for Central Tablelands County
Council. Sept. 25.

Plant:—Diesel Grader, heavy
duty, tandem drive; Pneumatic-
tyred Tractors (2), small, with
bulldozer blade, scoop and ripper;
Front End Loader, for attachment
to Tractor, for Shire of Cudge-
gong. Sept. 18.

Plant:—Heavy Duty Grader,
with power controls and scarifier,
75 H.P. tandem drive, and one
Speed Grader, Purchase of, from


(Turn to page 86.)



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CURRENT TENDERS — contd.

Municipality of Canterbury. Sept. 11.

Road Plant:—Front End Loader, with crawler tracks; Road Roller, Diesel powered, 6/8 ton; Diesel powered Excavator, with shovel equipment and 1 cu. yd. bucket; Medium Grader (weight over 12,000 lb.), powered with Diesel or kerosene motor, for Shire of Blacktown. Sept. 20.

Second-hand Plant:—Power Grader, with power controls, 10-foot Blade; Scarifier, Block, etc. (weight approx. 6 tons); Power Grader, manual controls, 10-foot Blade, Scarifier, Block, etc. (weight approx. 6 tons). Purchase of, from Shire of Hume. Sept. 20. Transformers (3), outdoor platform type, 100 KVA, 11 KV/415/240 volts, 3-phase, for Municipality of Queanbeyan. Sept. 23.

Spares, for Generating Sets. Sept. 12.

Tools and Gauges. Sept. 14.

DEPARTMENT OF WORKS AND HOUSING.

Air Conditioning Plants (2), for Merebin. Sept. 12.

MELBOURNE HARBOUR TRUST.

Black Steel Wire Rope (25,700 ft.). Sept. 15.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Clam Shell Grab Bucket, 27/22 cu. ft. Sept. 12.

Drawn Road Grader, blade, 7-8 ft. wide. Sept. 12.

STATE ELECTRICITY COMMISSION.

Belt Conveyor System (Spec. 50-51/4). Extended to Sept. 20.

Centrifugal Pumps, electric motor driven (Spec. 50-51/63). Oct. 18.

Distribution Transformers, 6,000 volt, and 22,000 volt. (Spec. 50-51/19). Sept. 27.

Dump Wagon and Loader (Spec. 50-51/82). Sept. 13.

Induced Draft Fans, Steel Flues, Dust Eliminators and Steel Housing (Spec. 50-51/5). Sept. 13.

Lifting Masts, steel and timber (Spec. 50-51/80). Sept. 27.

Oil Fired Steam Boilers (Spec. 50-51/83). Sept. 13.

Outdoor Switches and Accessories, 22 kV and 66 kV (Spec. 50-51/44). Nov. 1.

Structural Steelwork for 10 ton crane gantry (Spec. 50-51/50). Sept. 27.

Trailing Cable, V.R.I. T.R.C.S., 6.6 K.V. (Spec. 50-51/68). Nov. 15.

Transformers (66 kv. and 22 kv.), (Spec. 49-50/3). Sept. 13.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Structural Steelwork for girders and handrails. Oct. 10.

MISCELLANEOUS.

Ammonia Condensers and Condenser Towers, Purchase of, from City of South Melbourne. Sept. 11.

Annual Supplies:—Cement; Bitumen Emulsion; Pipes, for City of Camberwell. Sept. 11.

Annual Stores: Cement; Hardware; Lubricating Oils; Concrete Pipes and Sections and Motor

(Turn to page 87.)

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Furnace Oil. Sept. 20.

Folding and Bending Machine. Sept. 13.

Insulated Cable. Sept. 13.

Lathe, Sliding, Surfacing and Screw Cutting. Sept. 27.

Loco. Rollers ("N" Class). Sept. 13.

Mild Steel Frame. Sept. 27.

Mobile Cranes, petrol electric. Oct. 4.

Rope Sheaves. Sept. 13.

Telephone Cable. Sept. 27.

CITY OF MELBOURNE.

Isolating Switches, 440 volt. (Spec. 731/E). Sept. 25.

L.T. Oil Circuit Breakers and Current Transformers (Spec. 732/E). Sept. 25.

COUNTRY ROADS BOARD.

Bitumen Heaters (17), 600 gallon, oil fired, pneumatic tyred. Sept. 11.

DEPARTMENT OF PUBLIC WORKS.

Fuel Hot Water Service, for Irrewarra. Sept. 12.

Fuel Hot Water Service, for Calulu. Sept. 19.

Kerosene Hot Water Service, for Seymour. Sept. 12.

Kerosene Hot Water Service, for Corryong. Sept. 19.

DEPARTMENT OF SUPPLY.

Refrigeration Equipment. Sept. 8.

CURRENT TENDERS - contd.

Spirit, for City of Williamstown. Oct. 1.

Automatic Control Lights (traffic), for City of Camberwell. Sept. 25.

Crawler type Tractor, 40-60 h.p. fitted with power control unit and cable operated angle dozer, for Shire of East Orbst. Sept. 13.

Items of Plant: Tractors (2); Power Grader; Front End Loaders (2), for City of Preston. Sept. 11.

Materials: Ironmongery; Motor Spirit; Power Kerosene; Fuel Oils; Lubricating Oils and Greases, for City of St. Kilda. Sept. 21.

Materials: Lubricating Oils and Greases; Power Kerosene and Distillate, for City of Mildura. Sept. 11.

Mechanical Street Sweeper, for Shire of Mildura. Sept. 11.

Plant: Direct Acting Windmill, with 6 inch pump and all appurtenant parts; Water Pipes, medium pressure, various sizes, and Valves and Fittings, for Shire of East Loddon. Sept. 13.

Pressure Water Pipes and Fittings (12 inch), 16,660 ft., for Hordsham Waterworks Trust. Oct. 2.

Stores:-12 months' supply: Fuel Oils; Petrol; Concrete Pipes; Kerosene; Cement and Paint, for City of Sandringham. Sept. 11.

Transformers (2), 22,000/415-240 volt, 3-phase, 50 cycle; one to be 300 K.V.A., and one 150 K.V.A., for Borough of St. Arnaud. Sept. 15.

Transformers, for City of Footscray. Sept. 25.

Water Meters, 100 (1/2 inch), for Shire of Beechworth. Sept. 11.

QUEENSLAND

BRISBANE CITY COUNCIL.

Earth Hole Boring Machine. Sept. 22.

O.H. Travelling Crane. Sept. 15.

Piping, h.p. steam, feed, drain, and blowdown, valves and lagging. Oct. 20.

Ring Main Switchgear, 11 kV. Oct. 20.

Rotary Mechanical Scrapers, Rotary Distributors and Floating Covers. Sept. 22.

Underground Cable, 11,000 v. and 660 v.; Pilot Cable and Jointing Material. Sept. 22.

STATE ELECTRICITY COMMISSION.

Coal Burning Gas Producers (3), (Spec. 227). Oct. 18.

Coal Burning Gas Producers (3), (Spec. 228). Oct. 18.

Transformer, 33/11 KV and Regulator (Spec. 223). Sept. 27.

Water Tube Boilers (Spec. 224). Oct. 25.

Water Tube Boilers (Spec. 200). Extended to Sept. 27.

MISCELLANEOUS.

Cable, bare, cadmium, copper, for Townsville Regional Electricity Board. Sept. 11.

Engine-driven Alternator Sets (2), 750 KW, complete, for Cairns Regional Electricity Board. Oct. 11.

Pipes and Fittings, o.w. 4 in., 6 in., 9 in., and 12 in. dia.; pipes, concrete, 9 in., 12 in., 15 in., 18 in., 21 in., and 24 in. dia.; special pipes, valves, fittings, c.l. 3 in., 4 in., 6 in., 10 in., and 12 in. dia.; pipes, spigot and faucet, spun c.l., cement lined, 6 in., 10 in., and 12 in. dia.; pumps, centrifugal, elec. motors, and equip.; pumps, centrifugal, elec. motors, and equip., for Bundaberg City Council. Sept. 11.

SOUTH AUSTRALIA

DEPARTMENT OF WORKS AND HOUSING.

Dairy Equipment (Spec. 292). Sept. 12.

GOVERNMENT RAILWAYS DEPARTMENT.

Hopper Waggon (20), 25 tons, for Islington Workshops. Sept. 28.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Cast Steel Manganese, Steel Crossings, for Railways. Sept. 14.

Diesel Mechanical Shunting, Locomotives. Oct. 5.

Fork Lift Trucks, for State Brickworks. Sept. 14.

Motors and Starters, for S.E.C. Sept. 28.

Paging System, for REMH. Sept. 14.

Radio Telephone Communication System for Bunbury Harbour. Sept. 14.

Railway Car and Waggon Tyres. Oct. 12.

Sluice Valves (15 & 21 inch), for Mt. Yokine Reservoir. Sept. 28.

Steel Work for New Perth Causeway. Sept. 21.

X-Ray Equipment, for Fremantle Hospital. Sept. 14.

TASMANIA

MISCELLANEOUS.

Pressure Pipes, c.l., or Asbestos Cement, for Latrobe Municipal Council. Sept. 11.

NEW ZEALAND

HYDRO-ELECTRIC DEPARTMENT.

Suspension Insulators and Strain Clamps. Sept. 14.

Synchronous Condensers (2), 30,000 KVA. Nov. 21.

Transformer Bank and Spare Unit, 10,000 KVA. Oct. 2.

Transformer Banks and Spare Units (2), 50,000 KVA. Oct. 10.

MISCELLANEOUS.

Dredger, with pipelines, pontoons and accessories, for Nelson Harbour Board. Sept. 18.

O.H. Electric Cranes (3), 2-ton, for Wellington Harbour Board. Oct. 4.

(Turn to page 88.)

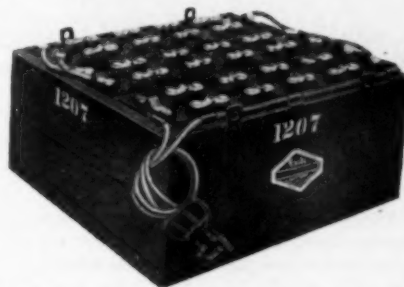
10,000 lb TELESCOPIC FORK LIFT TRUCK



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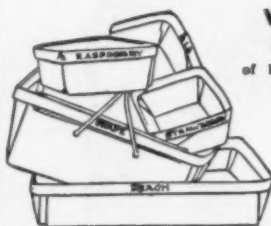
The "Yale" truck pictured above is one of the latest Electric Industrial Trucks to go into service in Australia.

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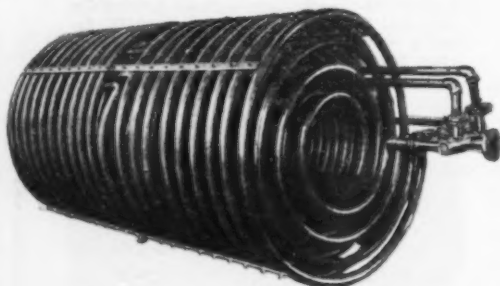
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Oct. 3.

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15.

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193). Sept. 20.

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(Sch. 182). Sept. 20.

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(Sch. 120). Sept. 20.

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Sept. 28.

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Sept. 22.

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Sept. 19.

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19.

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Oct. 31.

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lic or screw, feed, underground
type (P.T. 381). Extended to
Sept. 12.

(Turn to page 89.)

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Sprayer, for Shire of Nambucca.
Sept. 18.
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bucket capacity, for Shire of Val-
laroi. Oct. 11.

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DEPARTMENT.

Copper Cables. Sept. 27.
Fin Type Porcelain Insulators
(20 K.V.). Oct. 4.

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STATE ELECTRICITY COM-
MISSION.

Transformers, 3 phase and single
phase (Spec. 241). Dec. 6.

MISCELLANEOUS.

Switchgear, Relays and Instru-
ments, for Cairns Regional Elec-
tricity Board. Dec. 6.

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DEPARTMENT OF WORKS
AND HOUSING.

Exhaust Hood (Spec. 329), for
Central South Australia. Sept. 19.
Fencing (approx. 15 miles), for
Benmark Aerodrome. Sept. 19.

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Plant:—Super-diesel Road Roller
(12 ton), and Grader, horse-drawn,
for District Council of Tanunda.
Sept. 9.

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£105. McLean Bros. & Rigg; Item
2, £56; Item 5, £250; Item 6,
£18 10/-; William Adams & Co.
Ltd.; Item 7, £61. Western Machi-
nery Company.

Air compressors, "Servex" model
222M, two; horizontal air re-
ceivers, 5 cu. yd. cap., two, £227.
Atkins (W.A.) Ltd.

Shell Rotella oil, 30, 10,000 gals.
during period ending June 30,
1951, 6/- per gal. The Shell Oil
Co. of Australia Ltd.

Pumping mach., £1476. Noyes
Bros. (Melb.) Ltd.

Shovel loader and crane unit,
"Fowler Movemoor", £1,650. W.A.
Industrial Sales & Service.

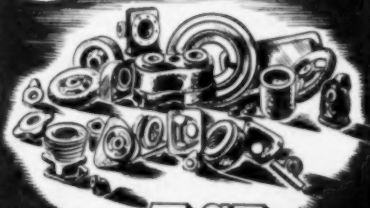
Air compressor, portable, £390.
Atkins (W.A.) Ltd.; metallizing
spray gun, "Metro", £250. Brown
& Dureau.

Elec. lamps for railways and
tramways depots, from July 19,
1950, to July 31, 1951. Items 1 to
33, Items 34 to 39, rates on appli-
cation. British General Electric;
Items 40 to 48, at rates. H. C.
Little & Co.

Portable conveyors, with 16 in.
belt, two, £458 ea. Atkins (W.A.)
Ltd.

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Item 5, 50,000 ft., £9/1/- per 100 lin.
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£2/3/3 per 100 ft.; 30,000 ft. of 1 in.,
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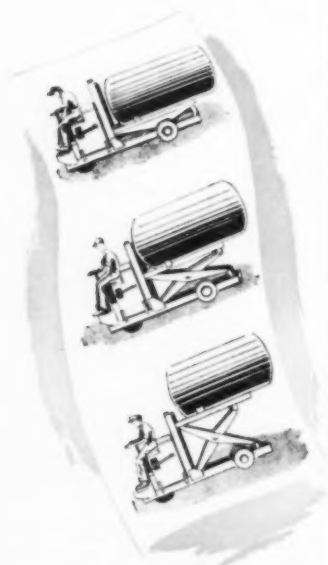
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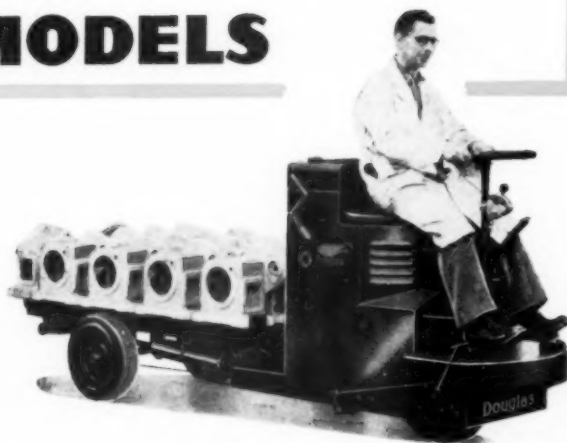
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